THE

LARYNGOSCOPE.

VOL. XVI. ST. LOUIS, MO., NOVEMBER, 1906. No. 11.

ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

THE LARYNGOSCOPE is glad to have an opportunity to offer its tribute of honor and respect, and join the American Laryngological world in commemorating the Bernhard Fraenkel Jubilee. To the septuagenarian, representative laryngologist, Bernhard Fraenkel, we offer our hearty congratulations.

We honor the man for his unceasing and untiring energies in the interests of progressive laryngology; we value his scientific work and research for its genuine merit; we thoroughly appreciate the excellent service of our editorial colleague in presenting to the profession the classic *Archiv für Laryngologie*; we wonder at the long years of indefatigable work and fruitful literary production of our Jubilee friend and teacher, and we respectfully and enthusiastically dedicate this issue of THE LARYNGOSCOPE to this memorable occasion.

M. A. GOLDSTEIN.

BERNHARD FRAENKEL.

BIOGRAPHY.

BY PROFESSOR DR. A. KUTTNER, BERLIN.

In a spirit of mingled earnestness and good fellowship, the host of friends, admirers, and pupils of Bernhard Fraenkel unite to appropriately honor the occasion of his 70th birthday anniversary. This event marks no epoch of time for one so well preserved, mentally and physically, and for one whose active faculties belie his years, whose industry and energy have steadily advanced and for whom there is neither today nor yesterday. For him this 70th birthday is but an arbitrary epoch of time. But for us, his friends and admirers, this festive day may serve as a retrospect; it may reveal him in the light of his versatility and individuality, and make clear to us our regard for him and what he has accomplished for us and the world at large.

Bernhard Fraenkel was born on Nov. 17th, 1836 at Elberfeld, the son of a respected physician. After completing his course at the high school of his native city, he entered the university of Würzburg in 1855. In the following year he went to Berlin, where he passed his medical examination, July 16th, 1859. On the 23d of May, 1860, he received the degree of Doctor of Medicine. While a student, he had the good fortune to count among his teachers such men as Johannes Müller, Traube, Langenbeck and Virchow. After acquiring his medical degree, Fraenkel worked under Virchow at the Pathological Institute of the Berlin University. After this, he took up general practice. From 1871 to 1875 he directed the in-patient department of the Augusta Hospital in Berlin.

At that time, Türch and Czermak were making technical improvements in the recently discovered laryngoscope of Garcia, in order to increase the practical usefulness of that instrument. Their contributions created the greatest furore. Here an ingenious technique made it possible for the human eye to see for the first time organs in actual function. The whole world was convinced that this discovery would usher in a new science which would call forth the greatest enthusiasm.

Among those most highly interested in this new method was Fraenkel, who, not satisfied to merely accept, entered the new field conscious of his new purpose. Despite the ever growing demands

of his practice and other scientific work upon him, in the face of months of interruption due to the three wars in which he took part, he acquired such skill in the new method of examination, that, through original investigation, he was soon able to add many improvements to the yet incomplete instrumentarium.

After obtaining recognition as a liberal contributor to the literature of rhinology and laryngology, he was invited to write the chapters referring to Diseases of the Nose in Ziemssen's System of Medicine. He gradually drifted from general practice into special work, and soon devoted himself exclusively to diseases of the nose and throat.

During the long years of service in these specialties, scarcely a question of interest relating to his work has escaped his attention. Special mention should be made of his investigation in Reflex Neuroses of Nasal Origin, Pachydermia Laryngis, Carcinoma of the Larynx, Prolapsus of the Ventricle of Morgagni, Paralysis of the Recurrent Laryngeal Nerve, and the Minute Anatomy of the Larynx.

Besides these investigations, he found time to contribute special chapters to encyclopaedia, year books, and collections, which are highly valued for their rich subject matter as well as for their perfect form. In each of these works, he constantly kept in mind the relation of the specialty to general medicine, for, during his early experience, he recognized the fact that a specialty declined as soon as this relation was disregarded.

His contributions to science are no greater, however, than his organizing ability and his talent to stimulate others to greater activity. As evidence of this, we can point to three splendid achievments. Bernhard Fraenkel was the first to bring about the establishment of a Rhino-Laryngological Clinic and Polyclinic at a German University. The founding of this State Institution was the realization of more than personal ambition. It denoted that Rhino-Laryngology had been authoritatively recognized, and all those who, with Fraenkel, had labored to this end and for so many years, could look upon their accomplishment as a triumph. What this clinical and teaching institution has accomplished can best be appreciated by glancing at its records. Those who sought relief within its portals can be numbered by the tens of thousands; and many young physicians obtained their first rhino-laryngologic experience here.

Bernhard Fraenkel is the founder of the Berlin Laryngological Society. This association was one of the first in Germany composed of specialists who sought mutual benefit in an exchange of ideas. As a member of this Society, I must refrain from mentioning its attainments, but I may be allowed to remark that it enjoys an en-

viable reputation and has done a great deal towards establishing a feeling of good-fellowship among the laryngologists of Berlin. Not only the local members of this Society, but the laryngological world at large has felt its influence. This Society possesses perhaps the largest laryngological library in the world, which has often been placed at the disposal of non-members in aiding them to prepare their papers and theses.

The third work which we owe to Fraenkel is the *Archiv für Laryngologie und Rhinologie,* founded twelve years ago. It now comprises eighteen splendid volumes, a monumentum aere perennius, an evidence of the spirit which animates Rhinology and Laryngology; an evidence, too, that this science still has a message to unfold!

Even these results were not sufficient for Fraenkel's untiring energy. From the very beginning of his scientific career to the present day, a question that has fascinated him and claimed his closest attention is that of tuberculosis. Aside from a few casuistic writings, his first systematic work was in this direction. He has sought repeatedly, from year to year, to solve these problems clinically and experimentally. The Tuberculin of Koch, the Cantharidin of Liebreich aroused his greatest zeal. In 1890, Von Leyden advocated the appointment of a Special Commission for the establishment of National Sanitoria for Tuberculosis, and Fraenkel, as delegate from the Berlin society and as acting chairman, lent all possible aid to the cause. At this time, the world was startled by the news that Robert Koch had found a specific remedy for tuberculosis, and this Fata Morgana brought the deliberations of this and other commissions to a halt; but not for long. On the 7th of September, 1894, in Budapest, at the International Hygienic Congress, Ernst von Leyden, the untiring champion, in his address, "The Disposal of Tuberculous Patients in Metropolitan Cities", stimulated anew the scientific world to more energetic and conscientious effort toward annihilating tuberculosis. From this time on, the work progressed, sometimes slowly, but ever onward and in the front rank, working with his friend, Ernst von Leyden, we find Fraenkel. He was a member of the German Central Committee for the Erection of Sanitoria. He was the first to suggest a General Congress to combat Tuberculosis, and thereby created an international interest in the subject; he lent all his energy toward forming the Berlin-Brandenburger Sanitoria Association which erected the model institution at Belzig. He collaborated with E. v. Leyden and C. Gerhard in founding the *Zeitschrift für Tuberkulose und Heilstaettenwesen,* a journal which served as an organ for all matters pertaining to the

medical and social problems of tuberculosis. If much good resulted from such ambitious projects, if many tears were dried, if many griefs were assuaged, and many misfortunes prevented, of the gratitude meted out to men of similar type and inclinations, we owe a share to Fraenkel; for in this worthy cause that united the efforts of men of all civilized countries, Fraenkel was most active and did all that lay within the scope of human power.

Why is it surprising, then, that municipalities, societies, and individuals were unstinting in their honors and evidences of friendship? He was the recipient of many decorations. He holds rank as Honorar Professor Ordinarius at the University of Berlin; Professor Ordinarius at the Kaiser-Wilhelm Academy. He is a Geheimer Medizinalrat, Member of the Prussian Medical Council, and of the Royal Academy of Sciences.

He is President of the Berlin and German Laryngological Societies, is a member of the Praesidium of the German Central Committee and International Society for the Prevention of Tuberculosis, and is an honorary and corresponding member of a large number of medical societies. These honors have always been gratefully accepted by Fraenkel, without, however, overestimating their value. Always preferring the office to the title, he nevertheless usually chose those whose duties were the most arduous. He spared neither the office nor himself to promote its best interests. The valuable resources of his private practice, his clinics, and collections, were always at the disposal of his professional colleagues, whether or not these men shared his opinions in regard to scientific matters.

Of his professional associates, he demands absolute frankness. Where he encounters hypocrisy, he is quickly aroused; but his anger is of short duration, and a calmer judgment soon controls his quick temper. The enthusiasm of the youth of twenty is mastered by the experienced, mature man of seventy, who has a deep knowledge of his fellows and a warm heart for them as well.

In this word-picture, I have endeavored to portray Bernhard Fraenkel as he appeared on his 70th Birthday. Our acquaintance began 23 years ago, and during 18 years we have been striving towards the same end, sometimes at variance with one another, but never have I felt that a difference of opinion altered his kindly feelings towards me, while my estimate of him has been strengthened with every exchange of ideas. I esteem him as a distinguished scholar, physician, and teacher, I value him as the organizer of many social improvements, and honor him as a warm, sincere and upright man. May he, as he is today, be spared for many, many years to his family, his friends, and to humanity.

THE AMERICAN EXHIBIT IN BERLIN, IN HONOR OF THE 70th BIRTHDAY OF PROFESSOR BERNHARD FRAENKEL.

BY EMIL MAYER, M.D., NEW YORK.

In the early spring of this year the following circular letter was sent to the secretaries of the Laryngological Associations in America:

Exhibition in honor of Professor Fraenkel's 70th birthday.

Confidential. Berlin, April 1906.

My dear Sir:

The undersigned are desirous of celebrating the 70th birthday of Bernhard Fraenkel by arranging an exhibition to illustrate the growth of rhinology and laryngology, to take place from the 17th to the 30th of November, and to be held in the Kaiserin-Friedrich Haus.

The exhibition will consist of the following sub-divisions:

1. Laryngoscopy and Rhinoscopy.
   - A. Instruments for examination.
   - B. Illumination apparatus.
   - C. Other technical devices for this purpose.
2. Local Therapeutics.
   - A. Operative (cutting and electric instruments).
   - B. Instruments for medication.
3. Bibliography.
4. Instruction.
   - A. Matter for Instruction. (Preparations, anatomical and pathological, charts, apparatus and instruments used in teaching.)
   - B. Teaching Institutions.

We would be greatly obliged to receive from you and your colleagues appropriate objects for this purpose.

With great respect,
Professor Dr. Edmund Meyer,
Dr. Arthur Alexander,
Dr. Börger,
Dr. Georg Finder.

This letter was presented by Dr. James E. Newcomb, secretary, to the meeting of the American Laryngological Association at Niagara Falls on June 2, 1906, and with it a personal letter in which he was requested to aid the project in every way. Dr. Newcomb stated that his duties would prevent his taking active interest in the matter.

It was unanimously resolved that the Association recommends participation on the part of its members; and it was moved and

seconded that Dr. Emil Mayer be appointed to assume charge of such exhibits on behalf of the association. Carried.

At the meeting of the section on Laryngology and Otology of the American Medical Association, held June 5, 1906, it was also resolved to participate, and Dr. Emil Mayer was also appointed to take charge of exhibits from its members.

At the meeting of the American Laryngological, Rhinological and Otological Association, held at Kansas City, similar action was taken and Dr. Wm. Sohier Bryant was appointed to cooperate with Dr. Mayer on behalf of that society.

The following letter was received in due course:

My dear Dr. Mayer:

I have just learned of the action of the National American Associations in appointing you as their representative in the matter that lies so close to us now, the successful exhibit in honor of Prof. Fraenkel's 70th birthday, and I should like to bespeak your cordial cooperation. I send you herewith the plan and scope:

The arrangement of the sub-divisions of instruments has been placed in my hands.

The exhibition is to be historical and we wish to select everything that has been devised and published since 1858, even though some of them may not have proven useful; and in order to reach the end, I would ask of you to secure the cooperation of the following firms manufacturing surgical instruments:

New York: Ford & Co., Meyrowitz, Ermold, Tieman, Eyers, Caswell, Hazard & Co.

Boston: Codman & Shurtleff.

Philadelphia: Wall & Ochs, Lentz & Sons, E. A. Yarnall & Co., Jos. C. Ferguson, jr.

Chicago: Truax, Greene & Co., Chambers, Inskeep & Co.

I would like to have these firms promptly notifiy me of their willingness to participate in the exhibition and to send me their latest catalogue so that after conferring with the manufacturing firms here in Berlin, I could ascertain what instruments to request them to send without repetition, and it would be a part of your duty to see that they are gathered together in one place and shipments made of such instruments as they may loan. In particular, if you could induce these manufacturers to delve among their dust laden shelves and select for us long-discarded, quaint and historical instruments, these would be priceless treasures.

I would beg you to procure from your Colleagues a statement of each instrument devised by them, the place of publication and name of the maker, and wherever possible a descriptive reprint.

It would be well to have each Colleague also see to it that a sample of such device or devices should be sent to us for the Loan Exhibit, especially if these are no longer to be had of the instrument makers.

You will see by the above that I am taking all advantage of your

kindly cooperation and am asking you to undertake a great deal, but without such cooperation we should be unable to have anything like an historical exhibit.

I shall thus be enabled to have a properly arranged catalogue, and to ask of your Colleagues only such instruments as may not be obtained elsewhere. As the instruments should arrive here in the beginning of August, haste is necessary, so you will not take it amiss when I ask for an immediate reply so that I may know how much assistance I may expect from you.

I should add that under the heading of instruments there belongs: Apparatus for illumination and inhalation, phantoms, obturators, apparatus for narcoses in operations on the nose and throat, etc., furniture of practical kinds, oesophageal instruments, but no otologic instruments.

With many thanks and anticipating your hearty cooperation,

I am yours very cordially,

Arthur Alexander.

Soon thereafter letters came from the associates of Dr. Alexander asking for support in their sub-divisions. Professor Meyer had undertaken the Department of Instruction and wished to have preparations, normal and pathological, illustrations, and apparatus used for demonstration, he desired also to have the name of every institution in America in which laryngology is taught and as far as possible the method of teaching.

Dr. Börger would like to have all text books on Laryngology printed in America, Atlases, Transactions of American Laryngological Associations, the latest number of American Periodicals referring to this special branch; he wanted further a statement of the names of all American Periodicals referring to our specialty, the place of publication, the length of time they had been published and the name of the editor.

Dr. Finder was to present the work of the various Laryngological Associations throughout the world, and he wrote asking for the names, number of members, when founded, names of President and Secretary. Photographs of prominent deceased members were also requested by him, as well as groups of living members.

The general plan being apparent I drafted the following circular letter, a copy of which was sent to over six hundred Laryngologists and Otologists in America.

It is here appended:

June 27th, 1906.

Dear Doctor:

There will be an exhibition of the progress in Laryngology and Rhinology in Berlin, Germany, to commemorate the seventieth birthday of Professor B. Fraenkel; the American Laryngological

Association, the section of the American Medical Association, and the American Laryngological, Rhinological, and Otological Association have voted to participate in the celebration and I have been elected by these Associations to act as their representative.

There will be a loan exhibit of instruments, books, charts, phantoms, the various forms of illumination, apparatus for narcosis in nose and throat operations, etc.

Will you please send promptly to my address the names of any instruments or apparatus you may have devised (even though the same may not have proven useful), the place of publication, name of instrument maker and reprint relating thereto?

Instruments of historical value are especially desired, even though not original with you. Otological instruments will not be required.

As far as possible instruments so described will be procured from the instrument makers who have already kindly, and with great unanimity, agreed to participate.

Instruments not in the market will be asked to be loaned for the occasion, and they will be promptly forwarded and returned at the close of the exhibition.

As the time is limited may I have the favor of an early reply?

From the responses thus far received I have every reason to believe that the American exhibit will be good as to quantity, and it requires only the hearty co-operation of Laryngologists here to add to its value, making a creditable exhibition of American work.

Awaiting your pleasure, I am,

Yours truly,

Emil Mayer.

Letters were also sent to surgical instrument makers, to manufacturers of office furniture and other apparatus, and to book publishers.

The response to the circular letter from colleagues were many, and as rapidly as they came a copy of the contents was type-written and sent to Dr. Alexander.

To enumerate these here would be demanding far too much space, and hence they will be omitted.

Among the most interesting of the historical exhibit from America is a beautiful album loaned by Dr. Thomas R. French of Brooklyn, giving an illustrated history of photography of the larynx.

From the firm of Tieman & Co. I was able to procure many relics. And I have to record that the majority of the surgical instrument firms were courteous and extremely liberal, and the great success of the American exhibit will be due in the main to their kindly assistance. The converse is unfortunately true of the western firms to whom invitations were sent to participate, and I have to record absolute indifference and coldness in the main on their part.

The firm of Kny-Scheerer & Co. are deserving of special thanks for receiving and shipping all instruments gathered in this country and arranging for their return.

The book publishers, with the single exception of Wood & Co., sent me promptly all the text books they publish.

The secretaries of the various National Associations sent copies of their transactions. And various firms such as the Globe Manufacturing Co., Allison & Co., Davidson Rubber Co., and others sent their goods on for exhibition.

To each instrument or apparatus was attached a tag bearing the word "America" in large letters in red ink across the face of it. And on it space marked out for the name of the instrument, by whom loaned, and its date, thus:

Over 1000 instruments and apparatus, old and new, have been sent.

To Professor Meyer there was sent a complete list of all the colleges in the United States, and those in which laryngology is taught were especially noted. The curriculum in several of the larger schools was formulated and sent to him.

To illustrate the teaching of laryngology in this country, an American subject was chosen and large charts used to illustrate the lecture on Intubation of the Larynx in the College of Physicians and Surgeons of New York City, were kindly loaned through the courtesy of Prof, William K. Simpson.

To Dr. Finder was sent a photograph of the late Dr. Louis A. Elsberg, another of the late Dr. Joseph O'Dwyer, two groups of photographs of the members of the American Laryngological Association, and two groups of members of the American Laryngological, Rhinological and Otological Society.

The text books and transactions were sent to Dr. Börger.

Owing to the absence of many colleagues from their homes during the heated term, the answers to my circular letter were by no means as numerous as I am sure they otherwise would have been.

From letters received from Dr. Alexander, and the correspondence has been a very lengthy one, I have every reason to be assured that the American exhibit will be an undoubted and unqualified success. His latest letter states that he and his associates are really astonished at the results attained in America, and that America will surely lead all other exhibiting countries.

He seems also grateful that the plan of having all exhibits controlled by one person for that country has been so successful in this instance. He is also kind enough to use some flattering terms regarding the labor of the American representative.

The plan for the exhibition is to be as follows:

The exhibit is to take place in the Kaiserin-Friedrich Haus, which is the building devoted to Professor Fraenkel's clinic, and all articles received before October 15th, will appear in the official catalogue. Each instrument is to be properly marked and all are to be placed in groups in accordance with the uses to which they are put, such as laryngological, nasal, etc.

Prof. Fraenkel has declined all requests for a formal celebration. There will be no banquet for this reason, and the regular meeting of the Berlin Laryngological Society, of which the Professor is president, will have no formal arrangement, although the meeting takes place on the eve of his birthday.

The exhibition from the various countries of the world is entirely the labor of his associates and assistants and absolutely without his previous knowledge. In addition to the exhibition from the Laryngologists of America, our National Associations have each agreed to send letters directly to the Professor, and are as follows:

American Laryngological Association,
Secretary's Office,
118 West 69th Street,
New York City.

October 9, 1906.

Prof. Dr. B. Fraenkel,
Berlin.

Honored Sir:

The Active Fellows of the American Laryngological Association, desire to heartily join in the tribute rendered to you on the occasion of the celebration of your seventieth birthday. The Association is deeply sensible of the honor conferred upon it by the enrollment of your name on the roster of its Corresponding Fellows.

Its congratulates you on a long life honorably spent in the service of science and of your fellow men, not alone in public station but also in private life. Its fellows who have visited the city of Berlin, have grateful recollections of your personal kindness and of

the courtesies extended to them at the University Klinik over which you preside. Moreover they beg to express their appreciation of your valuable contributions to the science of Laryngology, not alone in the records of personal experience but also, and notably, in the founding and successful management of the Archiv fuer Laryngologie, the master work in the literature of this special branch of medicine.

Finally they desire to express the wish that many years of happy life may yet be granted to you for the continuance of your beneficent activities.

By order of the council of the association.

(in absentia) A. W. de Roaldes, President,
New Orleans, La.

James E. Newcomb, Secretary,
New York City.

American Medical Association,
Office of Secretary,
57 West 53rd Street,
New York City.

September 13, 1906.

To Herrn Geheimrat Fraenkel,
President of the Laryngological Society of Berlin:

Dear Sir:

The section of Laryngology and Otology of the American Medical Association desires to honor itself in offering its sincere congratulations upon the happy occasion of your seventieth birthday. Those members of the section of laryngology and otology who are able to count themselves among your old pupils look back with the greatest of pleasure to the time spent under your instruction. Not only to former students but as well to the members of the section who have not had the opportunity of personal acquaintance, your name has been made a household one by the masterly scientific works which have been the fruit of your learning and literary industry. We trust that you will long occupy the position you have so many years adorned, and that the vigor of youth will ever be joined to the wisdom of ripe years.

(Signed) S. MacCuen Smith, President.
W. Sohier Bryant, Secretary.

The American Laryngological, Rhinological and Otological Society,
Office of the Secretary.

October 17, 1906.

To Professor Bernhard Fraenkel,
Berlin, Germany.

Honored Sir:

The Fellows of the American Laryngological, Rhinological and Otological Society extend to you their heartiest felicitations on the occasion of your seventieth birthday.

Many of us have had the opportunity in past years of knowing you personally in the relation of teacher and pupil. And to all of us,

through your many valuable contributions to the Science of Laryngology, yours is a name venerated and respected.

No one has done more than yourself to put Laryngology upon the high plane which it at present occupies.

The Council of the Society beg the honor of proposing you as a non-resident Fellow.

May it be yours to enjoy many years of continued health and usefulness in your chosen profession.

On behalf of the Council,

(Signed) Wendell C. Phillips, President.
Thomas J. Harris, Secretary.

New York, October 22nd, 1906.

To Herr Geheimrat Professor Bernhard Fraenkel,
Berlin, Germany:

Honored Sir:

When, in the spring of this year, the invitation to take part in an exhibition of the progress in laryngology, in honor of your 70th birthday, was received by the secretaries of the various American Laryngological Associations, and by them presented in due course at the open meetings, it was in each instance unanimously resolved that the members would cheerfully participate, thus showing their respect and admiration for yourself for your many valuable and scientific contributions to the specialty in which we have the honor to be co-laborers.

At the meeting of the American Laryngological Association held June 1st. 1906, it was unanimously resolved: "That Dr. Emil Mayer be and hereby is appointed as a representative of the Association in the matter of the proposed celebration of the 70th birthday of our Corresponding Fellow, Prof. Bernhard Fraenkel of Berlin, in which celebration the association has been invited to participate."

Following this, the Section on Laryngology and Otology of the American Medical Association, and the American Laryngological, Rhinological, and Otological Association each took similar action, thus placing all of the arrangements on behalf of America in my hands.

As a result of this centralization we hope to have lessened the arduous labors of your most efficient, hard-working and faithful assistants who have striven so earnestly to make the exhibition a success; to have avoided so much as possible reduplication; to have presented the very best that could be obtained under the circumstances, and to show our interest in scientific work for the advancement of our specialty.

The associations through their officers have extended to you their hearty felicitations, and, as the representative of them all combined, meaning thereby all American Laryngologists, as well as from myself personally, I beg to extend to you the most cordial congratulations and best wishes for many years of continued activity in the full vigor of health.

Accept, please, the American exhibit which has been so cheerfully gathered for the express purpose of honoring yourself on this important occasion as a very slight token of our respect and admiration.

Fraternally yours,

(Signed) Emil Mayer,

American Representative.

A letter just received from Dr. Arthur Alexander, dated October 6th, is as follows:

Permit me to express again my amazement at the practicality, thoroughness and usefulness resulting from your cordial co-operation with us. America will undoubtedly be the best represented country alongside of Germany, and this surely will make a lasting impression upon the Herr Geheimrat Professor B. Fraenkel.

At the time of presenting my plans for this exhibition to my colleagues, I did so because I was fully aware of the great interest that the Professor took in the historical development of our specialty. To-day I *know* that the idea of the exhibtion is very pleasing to him.

He has refused to be the recipient of any other attentions and has accepted the exposition, for the reason that there is something of a scientific nature and value therein.

The first shipment of American goods has arrived, and in a few days all packages will be opened. Instead of having two rooms for the exhibition we have doubled the space. In the historical subdivision we have all that remains of the original instruments of Türck, Czermak and Bruns.

Invitations to the opening of the exhibition will be extended in a few days, and we do hope that, in spite of the fact that it is held so late in the fall, some American colleagues may be present.

We would be especially pleased to have America's representative with us on this occasion and failing in that, I shall be pleased to extend such congratulatory letters as you may send in person to the Herr Professor.

With cordial greetings, I am,

Fraternally yours,

(Signed) Arthur Alexander.

To this I replied:

New York, October 22, 1906.

Dr. Arthur Alexander,
Berlin, Germany.

Dear Doctor Alexander:

Your letter of the 6th inst. just received and I am truly glad to learn that you are satisfied with the American exhibit.

I feel sure that when the cases are all opened and the instruments arranged that you will not be disappointed.

With this I am sending you letters from the three large Laryngological societies of America as well as one from myself as the representative of them all.

Next spring I shall render an account of my work to the Societies, and I have no doubt that you will by that time have not only reported to me but will have communicated to the Secretaries direct the fulfillment of your wishes in the matter.

In this manner your report and mine will be read in open meeting and the members who have been so thoughtful and helpful will feel that their denial was not unappreciated.

I regret exceedingly that I cannot see my way clear to be with you at the opening of the exhibition. It would give me very great pleasure to be with you on such an important occasion and to extend in person the felicitations of my native country, and which I ask you to do for me.

I thank you very much for the kind invitation, and I take this occasion to compliment you upon the successful completion of your very arduous and self-imposed task. How severe and trying the work has been to you and your associates these many months only those who have been in touch with the work will ever know; the mass of correspondence such as I have received alone, when multiplied by the many other countries, none of which perhaps had the forethought to have a single representative, as America had, is quite sufficient to indicate the enormous amount of labor entailed.

In spite of all, your letters were always encouraging, hopeful and indicative of a spirit that breathed loyalty to the purpose and a determination to succeed.

To you and Drs. Meyer, Finder and Börger my most hearty congratulations on the success of the exhibition.

Awaiting your full report of the success of your work, I am,

Yours fraternally,

Emil Mayer.

25 East 77th Street, New York City.

THE TEACHING OF LARYNGOLOGY, THEN AND NOW.

BY CHARLES H. KNIGHT, M.D., NEW YORK.

The hard lot of the modern medical student in this country is brought home to him with exceeding force when he is told that thirty years ago it was the custom to bestow a degree in medicine on many who had never seen the vocal bands or the rhinoscopic image in the living subject. In a few of the schools our specialty was recognized, and a course of didactic lectures was given to a handful of undergraduates who were now and then roused from their dreams by a spectacular tonsillotomy or removal of a foreign body from the pharynx. The name "laryngoscope" was doubtless known to most of them, but only a small proportion ever had—or took—the opportunity to become acquainted with its use. The idea of placing patient and pupil face to face was not yet seriously considered.

The first clinic for instruction in connection with any institution was established by Elsberg in 1863 at the University of the City of New York, although he had already been teaching for two years. In his Presidential Address at the First Annual Meeting of the American Laryngological Association in New York City, June 10, 1879, the statement occurs that there were at that time twenty-five teachers of laryngology in the medical schools of the United States. Yet, the specialty was in a measure on suffrance and the courses were optional. The general equipment of the clinics was in keeping with the crude and superficial methods of instruction. The meagre armamentarium offered in the olden time is in striking contrast with the vast collection of apparatus now at our command. It is not certain that the enormous multiplication of instruments in recent years brings marked advantage. Many are merely repetitions or trifling modifications of what has been already suggested, or they are constructed to meet a special indication or to gratify the whim of an individual. In the fad of the moment, for example, submucous resection of the nasal septum for deviation, we find one operator insisting upon the necessity of fifteen or twenty instruments, while another gets along very comfortably with half a dozen.

Formerly a nasal speculum, a tongue depressor, a polypus forceps or snare, instruments for removing the tonsils and the uvula, laryngeal forceps, throat mirrors and a set of camel's hair brushes for

making applications, comprised nearly all the requisites. Teaching consisted of an exhibition of highly colored plates, perhaps a few impossible models, supplemented by a verbal description of various morbid conditions and simple operations, together with a portentous list of formulæ for use in the treatment of "catarrh."

In course of time a tremendous impetus was given to rhinology by the discovery that the nose is the source of nearly all human ills. Interest in the larynx was overbalanced by the attention given to the new nasal pathology. Primary laryngeal disease was pronounced exceptional and we were told to seek higher for the first cause. Adenoids, turbinate anomalies, septal deformities and diseases of the accessory sinuses furnished many additions to the catalogue of morbid conditions and the list of measures and instruments of which the student must be informed. A universal onslaught was made upon all intranasal structures that exhibited the least variation from a supposed standard of health with the apparent object of converting the nasal passages into a smooth bore air-gun. Finally, we were recalled to partial sanity by certain colleagues distinguished for their broad conservatism with a warning cry against "the lust of operation" and an earnest appeal to "look beyond the nose." If the extreme radical theories put into practice through this period were inculcated in the rising generation of medical students, the result must have been the turning loose of a horde of vandals to devastate the community.

It is very far from my desire to belittle the importance of instruction in the special branches or to relegate our specialty to the subordinate position it once held. Indeed, this cannot be done, since its reason for being has been amply demonstrated. On the other hand, the question suggests itself whether we are not attempting to do too much with the undergraduate. By the time he reaches his final examinations, he is in a state of brain fag, bordering on neurasthenia. Very likely he is trained to the moment and succeeds in answering after a fashion the questions upon which hangs his fate. The excessive strain of preparation for the last ordeal is of doubtful value to mind or body. It must be admitted, moreover, that much of the alleged knowledge crammed into the brain is thereafter promptly forgotten or is to be amended by practical experience.

In the crowded state of the curriculum it is not reasonable to look for a trained laryngologist in a candidate for the medical degree. We should endeavor to start the student right by getting him accustomed to manipulations by correct methods. The chief points in normal and

pathological conditions must be driven into his mind by constant reiteration. Special expertness is a natural gift rather than an acquisition, yet a bungler at the outset need not be wholly discouraged. Details of almost ridiculous minuteness are not unworthy of attention. Such trivial matters as the mode of holding a patient's tongue and proper temperature of the mirror are not to be ignored. With a student of average intelligence it is not necessary to give an object lesson by lacerating the frenum linguae against the lower incisor teeth or by blistering the velum with a red hot mirror. The rudiments having been firmly implanted, a man may be left to work out his own salvation. Thus he may be expected to cultivate that manual dexterity and power of observation which are equally essential.

Here is the proper field for post-graduate instruction. He who has had some years of experience in general work is certainly best fitted for taking up a specialty. The narrowing effect of working in a rut is beyond question. Hence the importance of a substantial foundation in general medicine. It may be urged that the extraordinary skill needed by the present-day laryngologist is not easily acquired by one well on in years. To gain it he must begin young and take the risk of a contracted view. Of these alternatives the latter is certainly more to be deprecated. It is better to be less deft with broader vision.

So we find the great centers crowded with practitioners from the country who often come with the serious intention of following some particular line. Fortunately, the type of man who spends six weeks at the clinics, buys an elaborate outfit of surgical instruments and returns home to experiment on his neighbors, is extremely rare. We are divided between amazement at his presumption and sympathy for his unfortunate victims. A kind providence may save him from disaster and a malpractice suit until the lucky day arrives when he realizes that the road to proficiency is long and devious.

From his standpoint, restriction to teaching elementary principles renders the labors of the instructor dull and tiresome, and the temptation is strong to go afield and shoot over the heads of his audience. To him the result may be entertaining, but his bewildered hearers are apt to be sadly bored. In that Utopian era in which subventions by the state shall relieve financial pressure on the struggling student and commercialism shall be banished from the practice of medicine, we may be justified in extending the course of study so as to gain time for a more comprehensive and intimate view of the special subjects. Meanwhile we are compelled to be

content with imparting a comparative smattering in the hope that in this instance a little knowledge may not prove to be a dangerous thing. Under present conditions the best results seem to be attained by curtailing didactic lectures for the purpose merely of guiding the student in the right direction by fixing his attention on leading questions to the exclusion of fine points, and giving the larger part of instruction in the clinic room with cases for demonstration. Thus the interest of the student is more readily engaged and a more lasting impression on his mind is secured.

An obstacle met with in all ambulatory clinics is the difficulty of controlling material. Illustrative cases may not be at hand when wanted. Unusual cases must be utilized at the time they present, regardless of the particular topic under consideration. Thus it becomes impossible to adhere strictly to a fixed schedule. In spite of this drawback, object teaching is incomparably superior to the ancient system. A single inspection of a given lesion leaves a more enduring mental picture than the most graphic oral description.

An ideal consummation being realized to-day in some of our schools is a combination of laboratory and clinic. The practical work of the clinic becomes more convincing when fortified and confirmed by research work in the laboratory. The time will doubtless come when the latter will be demanded as an indispensible adjuvant to the clinic. The results will show in an accumulation of facts of greater scientific exactness and value, and in accessions to the ranks of the profession of medical graduates of broad culture and high attainment.

147 West 57 Street.

AN ORIGINAL RESEARCH ON THE CAUSE OF VOCAL NODULES.*

BY FRANK E. MILLER, M.D., NEW YORK.

I desire to call attention to an entirely new theory of the formation of vocal nodules based upon the personal observation of 234 cases occurring in my private practice. The facts herein mentioned are the results of further patient and persistent investigation of this subject, especially in consequence of many letters received from physicians and voice specialists who have read my article on the same subject in the November 1903 number of THE LARYNGOSCOPE, and have requested further explanation of the cause of vocal nodules. With this object in view, I have had five original and very careful dissections of larynges made by Dr. Edgar E. Stewart and Mr. and Mrs. H. Howard Brown, voice anatomists of large experience, to whose skillful work under my direction this discovery is mainly due.

Summary. Of 234 cases of vocal nodules coming under my observation during the last 15 years, 136 were found upon the left cord, 98 were on the right vocal cord. 32 were bi-lateral and symmetrical vocal nodules, that is to say, on the left side and right side at "C" sharp, that is at the anterior one-third of the cord, the most common place for nodules, two single nodules and two bi-lateral and symmetrical at "F" sharp in company with double bi-lateral "C" sharp nodules. The "F" sharp nodules were situated about the middle of the anterior third of the cord: one at "G" sharp, the remainder at "C" sharp. There was one "B" flat nodule on the left vocal cord and this was in company with a bi-lateral symmetrical "C" sharp nodule. This makes it very evident that these nodules occur at as many as four different points on the vocal cords, although the records of some investigators of this subject seem to allow for one only, and that always occurring at about the same point.

Observation, therefore, and recent experiments led me to believe that if these nodules of singers are to be permanently cured, the means of a correct vocal action must be resorted to in the majority of cases. Many people, not singers, produce nodules by coughing. I have seen a dog with nodules. But the nodules of singers which have caused so much discussion have been referred to by Prof.

* Read before the American Laryngological, Rhinological and Otological Society, Kansas City, June 11, 12 and 13, 1906.

Turck, who first illustrated and called the attention of the profession to *Chorditis tuberosa acuta*. Dr. James P. MacAvoy of this city, in his reminiscences of Professor Schnitzler, of Vienna, says that he was accustomed to say to his post-graduate class of students from all parts of the world, "A guinea to the one that makes a correct diagnosis!" Although Dr. MacAvoy lived with Dr. Bergasse, Professor Schnitzler's first assistant, for three years, he never saw the guinea carried away, or a student able to make the diagnosis of a singer's nodule or the acute chorditis of singers. It is no wonder then, that its diagnosis and etiology have been questioned.

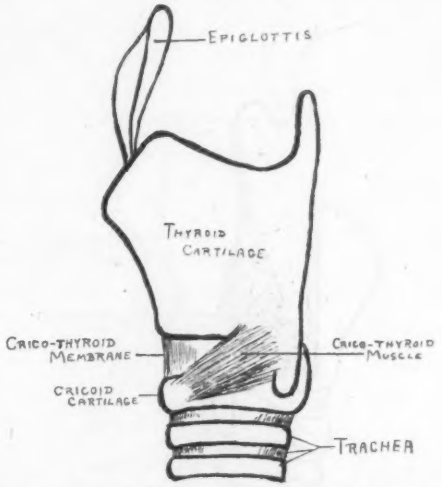


Fig. 1A. Diagrams to show crossing of the thyro-arytenoideus and thyro-arytenoideus externus muscles.

The purpose of this article is to throw any additional light possible upon work which has already been done; and, if issue is taken with any statements made by other observers, it is for the purpose of furthering investigation by causing discussion of any points at issue, in order that eventually we may arrive at the truth. That there must be cogent reasons for the affinity of the vocal nodule for certain portions of the cords, is certainly recognized by the most competent laryngologists, who have advanced many theories as to their cause, most of them mysteriously seductive, but not any of them definite enough to satisfy careful analysis.

Pathologist's Report. I herewith give report of the microscopic examination of double nodules. The epithelial layer manifests no deviation from the normal, either in its external hornified stratum (which is very thin) or in its relation to the subepithelial connective tissue, in any portion of the sections examined. Except in one or two very small segments, the thickness is almost uniform throughout. Even with strong magnification (x460) not the slightest evidence of separation from the subepithelial layer can be noted. At a point corresponding to the apex of the nodule there is a flask-shaped invagination, or crypt-like depression, about one-fifth the size of the total mass. This invagination begins as a tubular inversion which

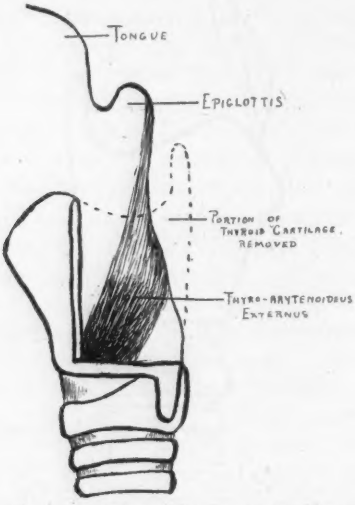


Fig. 1B. Diagrams to show crossing of the thyro-arytenoideus and thyro-arytenoideus externus muscles.

gradally enlarges to bulbous shape in the depth. In some of the sections this sacculation appears as an almost spherical closed cavity, which phenomenon, no doubt, is due to section above or below the level of the outlet to the epithelial surface. It could not be determined whether this was an artefact due to shrinkage in hardening of the tissue or not.

The connective tissue composing the bulk of the nodule is densest immediately beneath the epithelial layer and gradually becomes more and more rarified as the base or attachment to the cord is approached. Throughout these portions the spaces formed by separation of the

connective tissue fibers are infiltrated with a greater or less amount of homogeneous or very finely granular translucent substance in every way resembling coagulated edematous (serous) fluid. Near the base or cord attachment, the tissues are so loosely arranged that the fibrous fibrillae form a fine reticulum, the spaces of which are infiltrated with the translucent homogeneous or finely granular material. Here the tissue cells have assumed a marked stellate shape with decided prolongations which anastomose with fibrillae from other cells of like nature to form this reticulum. This appearance is unquestionably due to edematous infiltration of a passive and very probably a chronic nature; since there is nowhere any evidence of cellular

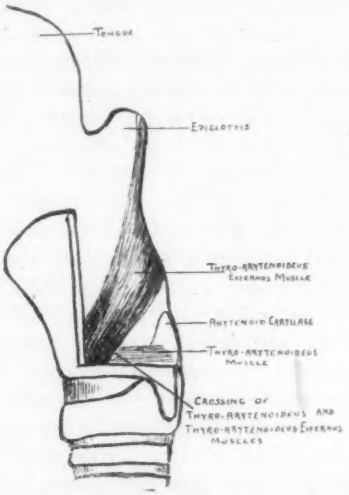


Fig. 1C. Diagrams to show crossing of the thyro-arytenoideus and thyro-arytenoideus externus muscles.

proliferation, except in the intima of the smallest vessels which show a moderate degree of nuclear activity, but not sufficient to markedly encroach upon the lumina. No red blood corpuscles and but rarely a polynucleated leucocyte (wandering cell) were noted outside of the blood vessels. Except for a slightly thicker horny layer of the epithelial covering, the nodule lowermost upon the pin presents the same histologic features.

Conclusions drawn from careful microscopic examinations made by Drs. Henry T. Brooks, of the Post-graduate school of medicine, and John Larkin, of the College of Physicians and Surgeons of New

York, made especially for this article, show that in its simplest form the nodule is a superficial oedema, manifesting itself on the edge of the vocal cord, sometimes appearing on one and then on the other, and at times on both, making symmetrical and bi-lateral nodules dependent entirely on causation. For instance, the cause might be a simple case of coughing, and to simplify matters, pathologically the nodule is an oedema, a swelling from effusion of watery fluid in the cellular tissues beneath. If aggravated by continued use of the voice, it may develop and become exceedingly dangerous to the voice by extending outward to the tissues of the cord itself. The cure for this state of thing is by absorption of the fluid contents and a consequent diminution of the size of the nodule, until finally the condition of the cord becomes normal and the voice is fully restored. In the formation of the nodule it is worth remarking that the traumatic or coughing nodule may appear at any point of the cord. It shows at first at one point and then at another. The nodule caused by vocal weakness, however, displays an exasperating, even puzzling affinity for particular portions of the vocal cords. It is generally found protruding from the anterior and middle third on one or the other side of the glottic opening. In fact, it frequently happens that the traumatic nodule, and what for convenience's sake has been arbitrarily styled the "vocal nodule," are simultaneously present, the traumatic nodule existing by itself in unusual portions of the cord or superimposed upon, or blended with the vocal nodule, each to be distinguished by its well defined location, although produced by totally different causes. Those who would explain this by the theory of attrition or segmentation, would refer you to the stroboscope of Professor Oertel, or possibly to the more or less familiar trick of the vibrating string and the bit of paper. If the paper be laid upon the string at a certain point it will be flirted away, while if it be laid upon the string at another point, the rest point, if you please, it will slip unagitated to the floor. Inasmuch as the vocal cords, are subject to the same laws, the lesson drawn from the string and the bit of paper applies, the nodule taking the place of the paper. Note, however, the difference. The string is single and there is no attrition. If there were two opposing strings, the bit of paper might be caught and sadly twisted in a miniature whirl-wind of opposing vibrations, and a nodule produced symmetrically on its mate, the opposite cord.

"By studying the laws of vibration of strings and pipes in physics, we find that there are sections of the vibrating string and portions of the air in the organ pipes which do not vibrate with the string

or pipe as a whole, but which, as nodules and segments, subdivide the string and pipe into active and passive portions." By careful observation we are able to see whether the vocal cords are making a segment in the center or whether they are vibrating longitudinally without making a segment with the opposite one by vibration. Dr. H. Holbrook Curtis says, "As a matter of fact, the tiny pearls of mucus are driven by the centrifugal force of the vibrating vocal cords to the middle point of the vibrating segment and from thence are thrown outward. They mark then, if anything, points of greatest movement in the vibrating segment, and not points of rest." Again, "this observation confirms the theory advanced several years ago by me as to the formation of nodules of attrition in singers' cords, and explains the removal of the same by exercises of vocalization."

There are those who define a "singer's nodule" as an inflammatory growth situated at the junction of the anterior and middle thirds of the vocal cords, a definition which is certainly most unsatisfactory when we know for a fact that nodules occur between the middle of the anterior third and at the posterior third, and also on both cords, as well as at the junction of the anterior and middle thirds. It has also been said that these growths are due to the employment of an injurious method of attacking tones, and are to be eliminated by using a "focus" of tone, (a term certainly very hard to understand); that this "focus" of tone places the initial impulse upon the cords in such a manner that attrition becomes impossible. I take issue with this statement because I believe that attrition is not necessary to form the nodule, as will be seen when I state my theory. It may be after these growths have been started they may be enlarged by attrition.

The defenders of the segmentation theory (portions of the vocal cord being divided into parts), state that the damage to the singing voice occurs in the upper medium register. What is meant by this is probably the upper half of the middle register, relatively high or low according to the voice, whether it be soprano, contralto, tenor or bass. It is also said that this segmentation is rearranged for higher pitches in such a manner that the vocal cords do not rub against one another.

On the theory of the specific action of the thyro-arytenoideus-externus muscle that I now propose, this rather mysterious statement is unnecessary. I also take issue with the following statement: "That singers' nodules are the result of a direct mechanical effect caused by the interference of opposite vibrating segments, and are

not true nodules in an acoustic sense has been proven beyond doubt by the investigations with the steoboscope of Professors Oertel, Koschlakoff and Simanowski." Of course we will have our own opinions and having made some investigation, we think that this is not proven beyond a doubt; and we do not believe that it can be so for the one grand reason that it is impossible to make proper observation with an instrument which employs a human subject whose cords are to be seen, again the eye and hand of the operator, and still further an instrument whose revolutions are too rapid for the human eye to make correct observation; and then again in all of these observations we can see only the one side of the cord, that being the upper side.

A short history at this point describing the typical occurrence of a singer's nodule will help the reader to understand the theory about to be advanced. At first there is a tonsillitis of varying intensity, the crypts of the pharyngeal tonsils usually containing yellowish cheese-like plugs of debris. The vocal cords are noticed to be slightly bowed and a little later reddened. Now the nodule appears at one side as a very slight elevation on the edge of the cord. This increases but little in size and one may appear on the other cord opposite the first.

My theory on the causation of singers' nodules is as follows: A great majority of the subjects present a follicular tonsillitis. Accompanying this there is more or less congestion of the mucous membrane in the larynx. This renders that portion over the vocal cords more liable to become oedematous. It is further thought that there is a hyper-activity of certain fasciculi of the thyro-arytenoideus-externus muscle, and that where these bundles cross the true cords there is produced a localized oedema or singer's nodule.

By a remarkable combination of circumstances, it has been my privilege to have under my professional care all four of the leading solo soprano voices of Old Trinity, St. George's Church, Heavenly Rest and St. Thomas's. These boys have all begun their changes in voice under identically the same conditions. The boys I refer to are Earl Gulick, Allen Schnebbe, Charles Mehan and Maxwell Kennedy, well known boy sopranos who have sung all over the country. The observation consisted of this: First, that it was the inflammation of the left tonsil, then a partial paralysis of the left cord, then the production of a nodule on the same cord at "C" sharp followed by the production of another nodule upon the other cord.

In the left tonsil of each one of these cases were found follicular chronic tonsillitis as determined by the usual signs of this disease, one of which was the fact that there could be expressed from the affected tonsil large cheesy plugs. In all these cases beyond a slight inflammation of the anterior and posterior pillars, there seemed to be nothing else to be observed about the tonsil. All of these little patients did not come to me for sore throat, or because they were afflicted with tonsillitis, but to consult me on their vocal debility and the loss of their singing voice. One of them in particular went away with my diagnosis of cheesy deposits in the left tonsil, and partial paralysis of the right cord, and with my request that he should not sing owing to an impending change in his voice. I did not treat this boy at all, did not even spray his throat because I saw the nature of his voice failure. I merely expressed a few of the cheesy deposits out of the tonsillar crypts with the result that at that service he sang well. He returned to me, however, with a nodule on his vocal cord produced in his attempt to sing "A" sharp at this service. Going from the medium "E" to the high "A" he felt a sudden giving away of his voice, although he was able to hold the note almost to its end. The following Sunday he was unable to sing, and although the boy returned to me during the week, I did no more to his voice than to tell him that I thought the change had begun. On the next Sunday his voice failed completely, so much so that the very remarkable statement was made by one of his musical friends to the effect that while the first spraying of his throat had resulted in a decided relief from all his vocal debility and had put it in good order, the second spraying had brought about a condition that had ruined his voice. Subsequently, at his father's suggestion, the boy resigned his position. In reality I had not used the spray at all, and did not treat him the second time. Since that time he has not sung at all, his voice having descended an octave without treatment, except for the treatment of the ear on the same side with the inflamed tonsil, which has been affected a long time in consequence of the diseased tonsils. Undoubtedly, this had also affected the ear through the extension of certain catarrhal disturbances. As a result, his voice has completely changed and is now in that broken condition that usually follows the change of boys' voices always noted at puberty. The nodule, however, has entirely disappeared and so has the paralysis of the cord. While singing, the usual phenomenon takes place, although he is now fourteen years of age. Should he sing from "A" flat down to "C" his voice would immediately break at "C" sharp and jump a fifth, that is, to

the "G" sharp below, either going into the man's voice or giving out entirely. Now in singing his voice jumps the entire octave from "C" sharp down to the lower "C" sharp on almost every occasion, and, strange as it may seem, all of these boys have had exactly the same phenomena.

If we turn to the thyro-arytenoideus-externus muscle we will see that its action is somewhat complicated on account of its fastenings.

A brief description of the anatomical conditions existing in this portion of the human larynx would seem appropriate here. The thryo-arytenoideus-internus extends horizontally backward from the inner surface of the thyroid cartilage in front near the median line to the muscular process of the arytenoid cartilage behind on either side and forms the inferior or true vocal cords. Externally or laterally, but still within the confines of the thyroid cartilage, this muscle is overlapped by the thyro-arytenoideus-externus or wall muscle whose fibres run almost vertically upward from the antero-inferior part of the inner surface of each ala of the thyroid cartilage from its lower border in front, and also from the antero-lateral portion of the inner aspect of the crico-thyroid membrane, to spread out in the mucous membrane of the larynx above, and is inserted in part, into the edge of the epiglottis. Thus it will be seen that these muscles cross nearly at right angles, somewhat in the manner represented in the diagram. (See Fig. 1 C.) It is just at side of contact of these two muscles on the mucous membrane where the vocal nodules occur.

From Luschka's drawing, it will be seen that there are practically three divisions of this muscle. The arytenoid division which unites with the cricoid, the thyroid division and the epiglottic division. The action of this muscle plays a most important part in the approximation of the vocal cords and as normal intrinsic action is dependent upon normal extrinsic action, it will readily be seen that any derangement of the external action would cause a direct tendency of this thyro-artenoideus-externus muscle to over-act, and it is upon the combination of those tonsillar lesions and the over-action of this muscle that my theory is based.

Acting upon this theory I have caused some dissections to be made with the inference that there must be some factor at work beneath the mucous membrane over the cords which causes a local oedema, and consequently, the slight elevations which appear. The idea was conceived that the venous return might be cut off by the pressure of certain muscles acting in different directions and thus cause the local swelling. (See Figure 1.)

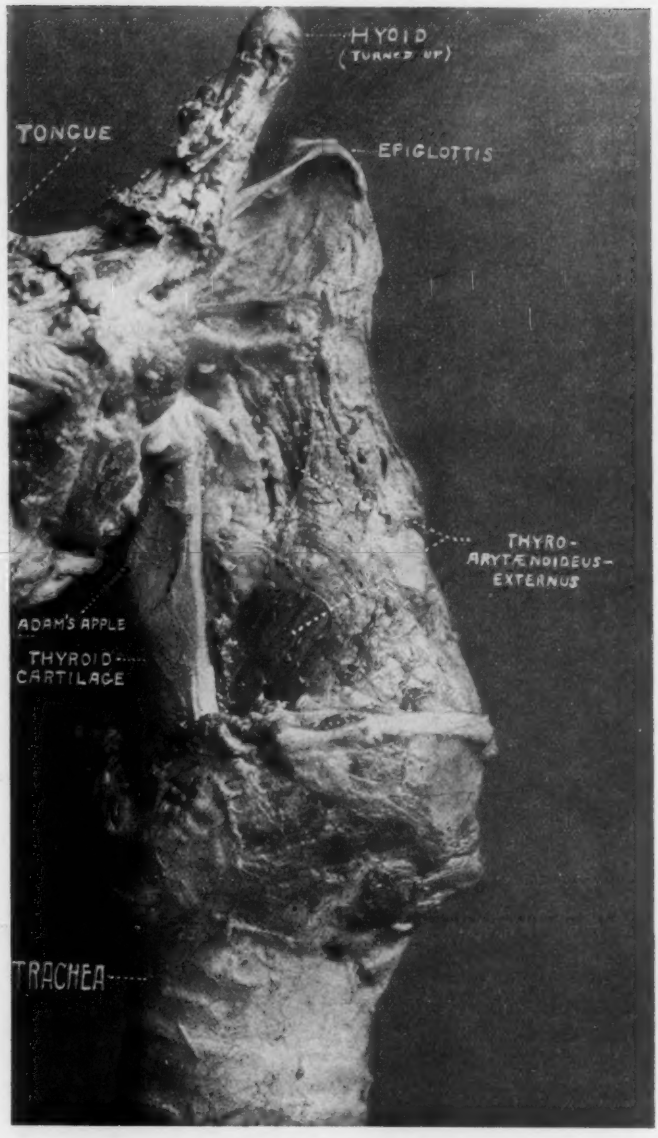


Fig. 3A. Larynx showing thyro-arytenoideus-externus.

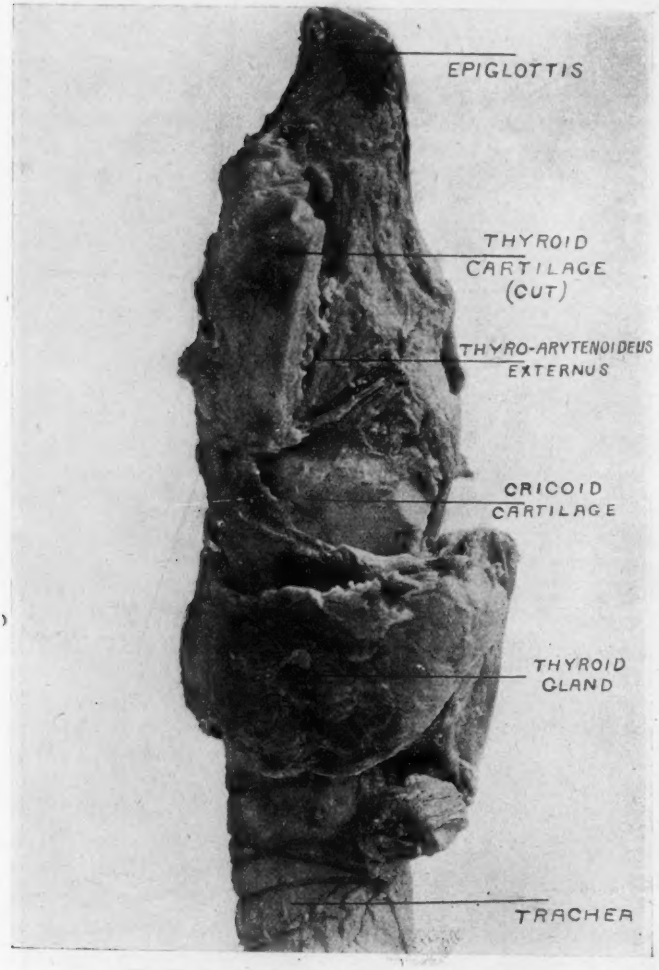


Fig. 3B. Larynx showing thyro-arytenoideus-externus.

The description of wall muscle in larynges dissected is as follows:

Case I. Larynx of a Chinaman, aged about 45. Occupation, laundryman. Voice high pitched, larynx large. Found thyroid fasciculus large, especially in its lower part. Crico-thyroid fasciculus also large, but a space between these fasciculi where the muscle was very thin. Arytenoid fasciculus broad and thin. There were no nodules on these cords. The larynx was a beautiful specimen, but the tonsils were in their normal condition.

Case II. Larynx of a negro, aged 24. Occupation, waiter. Voice guttural, specimen large, cords lax. The anterior fasciculus was larger, broader and stronger than in the former specimen, but

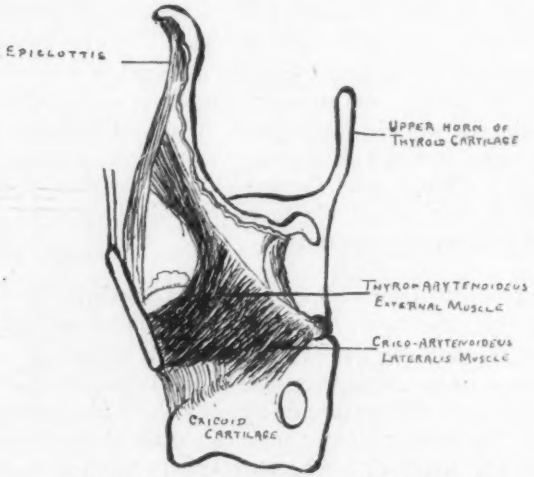


Fig. 4. Thyro-arytenoideus-externus muscle. (Luschka.)

the crico-thyroid bundle was not as distinct. The space between these fasciculi was better filled with muscular tissue. No nodules existed. Tonsils normal.

Case III. Larynx of a white girl, aged 18. Occupation unknown. Character of voice not known. Larynx fair size. Thyro-arytenoideus-externus well developed, especially its posterior portions, that is, those arising from the crico-thyroid membrane and from the arytenoid. No nodules present. Tonsils normal.

Case IV. Larynx of a butcher, aged 45. Specimen of medium size. Character of voice not known. In this instance the thyro-arytenoideus-externus was more peculiarly sloped. The lower part extending mostly from the thyroid cartilage was quite thick and broad for about one-half its course. The upper end, while not entirely lacking, was very poorly developed. For this muscle there was no fasciculus more distinct than another. Pharyngeal tonsils normal. No nodules present.

Case V. Larynx of a laboring man, aged 40. Specimen of large size. Character of voice unknown. This larynx resembled the previous one in all particulars except that the upper fibres of the thyro-arytenoideus-externus were more distinct.

Case VI. Male larynx, aged about 35 to 40. History unknown. Very large. Thyro-arytenoideus well developed, especially the arytenoid fasciculus. No nodules were present. Tonsils not enlarged.

By comparing the different larynges dissected, it was noted that the thyroid-fasciculus was stronger in its lower part in those cases where the voice was of a higher pitch. While the number of specimens dissected in which the character of the voice was known before death is still very small, the possibility that the size and strength of different fasciculi of the thyro-arytenoideus-externus causes different tones seems to assert itself.

After procuring these photographs of this muscle, I recently had the following experiments made to try to produce a nodule:

A medium sized dog was examined to see if he had any nodules on the vocal cords. None were found. His larynx was then operated on, using the modern surgical asepsis with the idea of producing nodules. The anterior inferior angle of one ala of the thyroid was trephined (⅜" trephine) and a mattress suture taken in the thyroid fasciculus of the wall muscle, shortening it. The parts were then closed. The dog was allowed to live two weeks, means being taken to cause him to bark considerably during the time. He was then chloroformed, the larynx taken out and the following observations made: Skin wound healed by first intention; parts beneath in beautiful condition: muscle shortened considerably. No nodules were found.

This would hardly disprove the theory as the tonsils were not in the typical condition observed by me.

Another experiment. A fairly good sized shepherd dog was used. In order to produce a tonsilar inflammation in the animal,

plugs of debris were expressed from tonsils of two renowned singers having nodules, one male, the other female, and rubbed with considerable pressure into the mucous membrane between the pillars of the fauces while the dog was anesthetized. This was done within eight hours after removal from the singers' throats. On inspecting the throat every day for a week no change was noticed.

Several factors were supposed to account for this. First, the bacteria contained in the tonsillar plug from the human pharynx were thought to be of too low a virulence. Second, the resistance of the mucous membrane without any previous congestion was thought to be too high. Third, several errors in technique were discovered which probably played a lesser part.

These several indications were met in the following ways: The resistance of the tonsils and mucous membrane was lowered by painting the region with cantharidal collodion while the dog was anesthetized. This produced a typical congestion and in a couple of days a young and virulent culture of pure streptococci was rubbed on the inflamed parts. No false membrane formed but a true tonsilitis developed. After a few days the dog was prepared for operation (neck shaved and all aseptic precautions taken.) The skin was incised in the median line and one ala of the left thyroid cartilage exposed. This was treated in the following manner: A slit-like opening was made in its lower part about 3/16 of an inch in width and almost as long as the entire width of one ala. The piece of cartilage was removed and the thyro-arytenoideus-externus lifted into the gap. From its central portion, a piece was removed consisting of the entire thickness but not completely dividing the muscle, leaving the anterior and posterior portions in the hope that nodules would be produced at the joints where these fasciculi pressed on the true cord. The vacancy in the cartilage was then packed with a gauze drain and the latter carried to the surface. The skin wound was sutured and a 1-100 formalin dressing was used. Convalescence was uneventful except that it was noticed that the dog's bark had changed.

The cords were examined with a laryngoscope and a nodule was noticed about where the posterior fasciculus crossed the cord. This dog was shortly afterwards chloroformed and the larynx and tongue were removed. A nodule was observed on the posterior portion of the left cord. The larynx was then placed in a weak solution of formalin and the nodule became smaller. On splitting the larynx open from behind through the cricoid cartilage, the nodule disap-

peared. From this it is suggested that nodules cannot be preserved after death.

This operation of trephining the thyroid cartilage and suturing or exsecting portions of the wall muscle has now been done on six dogs and one goat without a death or any post-operative difficulties. The experiment was undertaken with considerable hesitation at first, owing to the fear of expected œdema of the glottis, but no such accident occurred. The operation is quite bloodless, even more so in the goat than in the dog. The former seems to be better adapted to this particular research for anatomical reasons, also because of its ability to modify the pitch of its bleating.

We have under way several other experiments of like nature, by which we hope that nodules can be produced in every case by means of infection of the tonsils and perverting the action on the thyro-arytenoideus-externus muscle. We hope to have the pleasure of demonstrating the successful outcome of these experiments at some future date.

Treatment. With regard to prevention of nodules, if in childhood adenoids and tonsils receive their proper attention, if lingual tonsils and pharyngeal hypertrophies are watched with care and removed, if children are made to be very careful during the period of voice change, the establishment of menstrual functions and other conditions which cause sympathetic nervous changes to take place affecting the mucous membranes at the age of puberty, if a correct synthetic voice production or voice science be established which can be simplified and studied by proper anatomical and physiological laws, we probably should never have the nodule question to consider except it be a matter of accident.

The following are the results of different kinds of treatment employed by me for the eradication of nodules. Prior to the year of 1902, I employed the ordinary medical means familiar to all of you. I found that such treatment was attendant with more or less indifferent success. Having been a public singer of recognized standing for a number of years, the pursuit of this subject was of especial interest to me and, while recognizing the fact that all nodules known upon the vocal cords did not occur in singers' throats, yet the systematic recurrence of nodules at specific points on the vocal cords, long ago led me to believe that the manner of voice use had something to do with this phenomena.

In all my cases, in addition to vocal means there were used some Swedish massage movements on contracted chin muscles, believing

that much good was accomplished by this means during the first stages of treatment. These movements aid in cure by relieving some of the worst muscular contraction and by stimulating circulation and nerve supply.

In the year 1903 I purchased an apparatus which, as used by me, has proven the soverign remedy for nodules. This instrument completely supersedes the mechanical work above mentioned, and has more value in that it is an anesthetic and produces powerful desensitizing effects upon the mucous membranes that border upon the marvelous. One knows that a powerful blow behind the ear, upon the chest, back of the ear or in the epigastrium, namely, over the principal vaso-motor ganglia, will shock the subject to whom the blow is given, causing an anesthesia of that part and a blanching of the mucous membrane within the nose and mouth similar to that produced by a sudden most serious hemorrhage. With an instrument which consists of a rubber cap screwed into a swedish massage bulb fastened to a Vosberg's cable and a rapid motor operating this cable, anywhere from 1800 to 3000 revolutions can be administered to the human body in the shape of blows accompanied by oscillation and suction. By placing this instrument at a speed of 3000 revolutions per minute back of the ear and drawing it in the position of the stylo-pharyngeus from its mastoid attachment to the thyroid, then over the sterno-hyoid and sterno-thyroid, thence over the four layers of chin muscles, thence over the angles of the neck, then again from the occiput down along the spine along the vertical column to the os sacrum, (the whole process not taking over two minutes) one will have produced in the mucous membrane of the nose and throat most remarkable phenomena. A pallor will have spread all through the nares, posterior and inferior, over the pharynx and into the larynx and, particularly, will mark the region of the epiglottis and larynx. Vocal cords with nodules upon them which are red and bulging and covered with mucous will seem to be several shades paler. The cords themselves will be less bowed and the nodule will become surprisingly smaller and apparently absorbed to a great degree. I know of no means that produces such quick and remarkable effects upon the mucous membrane of the vocal cords or upon these various parts mentioned above. So remarkable is this, that nodules, if quite acute, not too large and deeply infiltrated, will be absorbed in from three to five days. Of course, by singing again they are apt to recur, especially if the false mechanism is indulged in or the reflex conditions established by the nodule producing element have not been eradicated.

Dr. H. Holbrook Curtis's demonstration consists in depressing the chin on the sternum, using supra-costal respiration, at the same time singing the syllable "Maw" at middle "C" falsetto, while plucking the lips with the finger and focusing the tone "Dans La Masque." This method I think produces a falsetto tone which cannot be amplified correctly and is therefore not a useful procedure. It is also questionable in that it is apt to upset a voice mechanism acquired after years of arduous study. In the true falsetto, the larynx is raised from the fifth cervical vertebra where the longus colli muscle divides, especially so that the larynx rests upon the spine proper, which, as anyone can readily see, allows for resonance from the spine and added leverage for amplification of tone. Consequently, there is no point of control for the use of the extrinsic muscles which are so necessary, not alone for amplification but for overtone. For instance, the palato- pharyngeus, one of the longest of the extrinsic muscles, also useful in giving the Italian resonance to tone, and one of the great producers of overtone on account of its length, is noticeably deflected from correct production of tone by singing falsetto.

The "Maw" method for curing nodules is advocated as well for correct rules of voice production, and when scrutinized carefully, it will be found to consist of the same old empirical formulas established by maestros of long ago. Even in the last twenty years, one of our famous lady teachers, Marie Bissell, has advocated the singing of "Maw" in about the same way, but not falsetto, for bringing the voice forward and obviating the so-called breaks and holes in the voice which were probably due to the results of nodules.

Dr. Curtis's idea might be explained on the ground that by singing falsetto, the position of the arytenoids are so changed in their action on their cricoid facets, that the edges of the vocal bands have a different alignment, hence, vibration under such conditions might benefit and reduce the nodular condition of the cord, as it would no longer be irritated by the opposing cord. But the voice specialist should not use vocal exercises for inflammatory conditions nor allow singing at all for at least ten or fourteen days, dependent, of course, upon circumstances. The practical treatment of these cases resolves itself into the following: The chief beauty of any voice is its quality. To test this, patients are actually made to sing the scale of "C" for a low medium voice (male and female voices an octave apart); a medium voice, the scale of "E"; higher voices, the scale of "A" flat. The low voices will break in the vicinity of "C", and the higher voices, "C" sharp, "D", "E" and possibly "F", dependent upon

the closing of the crico-thyroid niche, the lack of harmony between the extrinsic and intrinsic muscles, and other reasons already stated. As the patient sings these scales which are given them from a small reed pipe, the quality is judged and the break noted. I sit directly opposite them and can almost invariably tell on which side the nodule is in the same manner as I can tell when stepping on my front stoop, whether the cars of any one of the three roads are running and in what direction, and oftentimes I can feel in my own throat sympathetically on which side the tension is, the affected cord being opposite the one from that in which I feel the tension. In this way one has arrived, as the music teacher would, objectively and subjectively, at the cause, and has an excellent idea as to what makes the quality of the voice under examination deficient. The next step is to get at the underlying cause. I had never yet seen a nodule in its incipiency but that cheesy plugs could not be found in some one of the crypts of the tonsils. More than twelve cases had been sent me by other physicians stating that this condition was not to be found, and in each case by deep pressure on the tonsil over the anterior pillar and carrying it downward to the base of the tongue carefully so as not to abrade the surface of the mucous membrane, cheesy plugs could be expressed. These tonsils are carefully treated by deep spraying into the crypts with a ten per cent solution of argyrol, which generally relieves the condition, and the patient will state that the voice is much clearer and that they feel easier. Sometimes touching the tonsil in such a condition causes a violent reflex. The next procedure is to use the Vosburg vibrator as already directed, which vibrates the cord, as can readily be seen by looking at the larynx with the laryngoscope, or making the patient sing, then the egophony will be apparent, showing that the cords do vibrate by means of the vibrator and that any further explanation is unnecessary. Before leaving the office they are instructed to massage the throat as follows: Straight and boring movements from the tip of the thyroid cartilage to the mastoid, from the same point on the thyroid cartilage down to the clavicle; from the same point again on the thyroid to the point of the chin. This is kept up for ten minutes morning and night. The solution to be rubbed in contains one-half drachm of salicylate of methyl to an ounce of white vaseline and lanoline, equal parts.

It so happens that we often have an acute inflammatory condition involving nares, pharynx, tonsils and bronchial tubes with this condition. Then I treat them thoroughly by means of an inhaler, preferably a Dr. Louis Sass inhaler, four or five long inhalations with a

mixture of iodoform, 20 grains, and ether, one ounce. This has the effect, on being inhaled, of covering the entire mucous membrane with a fine layer of iodoform and seems to invade the entire respiratory tract. This caution must be observed, that a lady can scarcely stand more than three such inhalations, and a full-fledged man, more than five, and they must be made to lie down immediately after taking it for ten minutes. By this means startling effects are produced in all the membranes affected, especially upon the nodule if inflamed or œdematous. If this condition is at all accompanied by coughing, the following mixture is given: Spirits of chloroform, spirits of camphor, of each, one drachm, codeine, one grain, syrup of acacia, one-half ounce, spearmint water enough to make three ounces. Two teaspoonfuls every hour until relieved. Another point about the ether and iodoform mixture is that it must not be used over three times the first day and not over two days in succession, and should always be freshly made. It has a tendency to thicken up the mucous membrane and mats down the cilia of the bronchial tubes.

When the tonsils remain seriously affected by more deep seated conditions than first mentioned, combined with malarial or rheumatic affections, appropriate treatment is given, sometimes even the removal of the tonsil. I have a decided disinclination to do this, not because it will do any harm or affect the guality of the voice, but because I have known it to produce a psychological voice failure that was astounding, although time has shown the operation to be of wonderful benefit in every way to the voice.

One other suggestion, I should like to make in regard to these acute conditions just described, is that for one or two treatments, not more, the whole respiratory tract be sprayed with solution of adrenaline, one to five (5) thousand, followed immediately by ten per cent of solution of argyrol, the argyrol is objectionable on account of its nasty black staining qualities, but this can be easily remedied by cold water, strong ammonia water, or plain bichloride mercury solution. A simple and effective medical help to clear up the hoarseness that accompanies this nodular condition is potassium acetate and potassium bromide, 15 grains each, tincture belladonna, 15 minims, menthol, one-half grain, alcohol, syrup of acacia, each one-half ounce, and camphor water enough to make four ounces. Mark it two teaspoonfuls every two hours until relieved.

By combining our efforts, we, throat specialists, might become largely instrumental in helping singers and singing teachers to cast aside forever empirical methods, and accomplish the development of

the only true thing, a synthetic method. Although the main purpose of this article seems to be the establishment of the origin of nodules, I should feel highly gratified if the ultimate outcome of it should be their prevention.

The nodules themselves can be removed from the cords by means of a Miles, a Krause-Heryng or a Schroetter's forceps. I have repeatedly removed large ones, single and double, without harm to the voice. I have recently seen Signor Monte-Griffo, whose nodule was removed by Sir Morrell Mackenzie at the request of Dr. Louis Elsberg, without any effect on the voice.

Singers' nodules have been burned off by cautery, silver nitrate stick, chromic acid tips, lactic acid and latterly by Prof. Epstein of Vienna, with tri-chlor-acetic acid as related to me by Dr. Clarence Warfield to whom I am indebted for the argyrol solution.

But in spite of this, I have seen nodules of three years duration well cured by proper vocal exercises. The psychological effect on singers with nodules causes them to practice pinching methods which destroy their good voices. Singers can be quoted who lost their voices by such procedures.

It is the earnest hope of the writer that this article may stimulate additional interest in the causation of vocal nodules and that it may further investigation and research on the subject.

22 West 31st Street.

THE SUBMUCOUS RESECTION OPERATION ON THE NASAL SEPTUM.*

BY JOSEPH C. BECK, M.D., CHICAGO, ILL.

Possibly no operation in the nasal cavity has received so much attention as the submucous window resection, and it seems to me that were it not for the fact that this is a symposium where a thorough discussion of the various methods of operating on the nasal septum is to be considered, another paper on the subject would be superfluous. I have attempted in this paper to take up the various steps of submucous operation as compared with other methods of operating, stating the advantages and difficulties and offering suggestions as to all the difficulties and how they may be overcome. In this connection, I have done some original work in as far as I am able to learn from the literature, that is, the diagnosis as to the consistency of the nasal septum, which I will take up later.

The history of the operation is well known to you, and only the mentioning of the names of Krieg, Boeninghaus, Ingals, Freer, Ballenger, Hajek, and, last but not least, Killian, will suffice to recall the progress of this operation. I believe that Killian has done much to simplify the technique of this operation. His cartilage plow, later so ingeniously modified by Ballenger, has made the operation comparatively simple and rapid, so that the former dread of its tediousness has been entirely removed. To every man who has thus far written on the subject belongs credit in adding another little point, thereby doing a better and simpler operation, until now a fairly good technique is established.

Freer once stated in discussion that, as far as he was concerned, there was but one operation for deviated septa, and that was the window resection. With some of the rarest exceptions, I will admit that that is also my present conclusion as regards choice of operation.

In July, 1904, was the last time that I performed a Gleason operation, and in September of the same year the last Asch operation. Since that time no matter what kind of deviated septum I had to deal with, I always started out to do the submucous resec-

* Read before the American Laryngological, Rhinological and Otological Society, at Kansas City, June 11, 12 and 13, 1906.

tion, and in but three instances did I supplement the icising of the septum without the additional use of Adams' forceps. One of these casesis of sufficient interest to briefly describe it. A boy, 6 years old, who had a marked anterior deflection of the septum, and adenoids, was prepared for the submucous operation and after the usual preparation incision into the mucous membrane was made, the same carefully dissected until the cartilage in its whole extent was liberated. An incision through the cartilage was just finished, when the boy collapsed and all symptoms of shock were present. I placed the patient on a table and with the usual restoratives revived the patient. The pulse being exceedingly slow, I hesitated to use any more anesthesia, nor give a general anesthetic, and consequently completed the operation in the following manner: A Freer septum knife was introduced under the mucous membrane and turned at right angles; the deviated septum was incised three times in the horizontal direction; then I introduced the Adams forceps, fractured the septum, and introduced the splint. In this way I did a submucous Sluder operation. The septum healed very kindly, and a fairly good result was obtained.

The varieties of deformed or deflected septa require a technique specially adapted to each individual case depending upon whether it be bow-shaped, S-shaped, or with marked irregularities; whether it is in a cartilaginous or a bony portion, or both; whether there be a dislocation and protusion of the anterior triangular cartilage; whether a maxillary ridge is present, and if so, whether it consists of bone or cartilage? Also, what is the consistency of the septum; whether thin or very firm?

And are there present any associated pathological conditions of the septum and other intranasal structures?

Most of these points can be fairly well established by inspection and palpation. However, the density of structure of the septum, whether bony or cartilaginous, particularly the ridge, cannot be so determined, and I have thought of a method to aid in its determination. Permit me, therefore, to make a preliminary report of this method, which I will describe more exhaustively in a subsequent paper, namely, intranasal, and tympano-mastoid radiography.

The technique of making a radiograph of the septum is as follows: First, introduce a sensitized celluloid plate, wrapped with post office paper, and covered externally with a wax paper, as far back as the posterior pharyngeal wall, allowing a small portion to protrude from the external naris. The film is about an inch in width and three inches in length. In the shape of a nasal splint. These

plates one can readily cut according to the size of the external naris. The larger the naris, the wider the plate which can be introduced, and this is a distinct advantage. Two plates may be introduced, the one above the other, in that manner taking the entire septum. The plate is usually placed near the floor in close proximity to the ridge. However, it may be placed over any portion which it is desired to photograph. In case the parts are very sensitive or swollen, cocaine and adrenalin should be used before introducing the plate. The various materials which I have used were bromide paper, kodak films, glass plates, and sensitized celluloid. The films and celluloid plates are preferable, owing to their pliability and still retaining sufficient firmness for introduction. Positive prints can be made from these, if desired.

The accompanying negative (Fig. 1) with illustration shows in the first place the portion external to the nasal cavity, which is very dark. Secondly, the cartilaginous portion of the septum, being lighter in color, and, finally, the bony portion of the septum, which shows almost no shadow. The denser the cartilage, the lighter it appears; and similarly according to the thickness or classification of the ridge, its shadow varies in intensity, thus corresponding to certain fundamental principles of radiography.

Such conditions as perforations and cases after the submucous operation has been performed show distinctly as dark areas; and with a very low tube one may possibly determine regeneration of cartilage between the two muco-perichondrial layers.

The reasons for always choosing to do this submucous method in preference to all others are obvious to any operator who performs it.

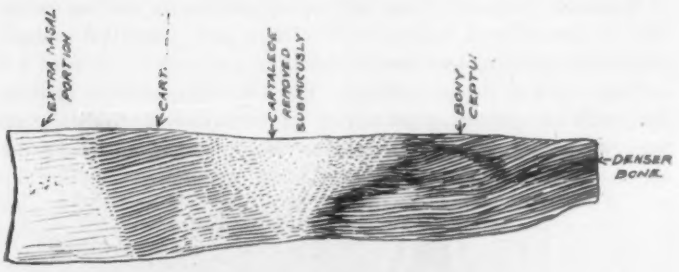
1. In the first place, the operation can be done in almost every instance under local anesthesia, with comparatively little pain, shock or discomfort to the patient.

2. Hemorrhage during and subsequent to the operation is usually very slight.

3. The after-treatment is so very simple, not annoying to the patient, and shortened by many weeks.

4. Only one side of the nose is attacked, and the patient breathes freely through the other nostril while the operated side is healing.

5. The results are obtained with the destruction of a very slight area of functionating mucous membrane and cicatrices and crust formations are not present in the same degree as in other methods of procedure.



Extra Nasal Portion Cartilage Bone

Extra Nasal Portion Cartilage Bone

Extra Nasal Portion Cartilage Bone

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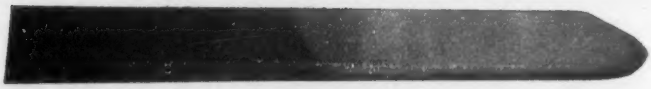
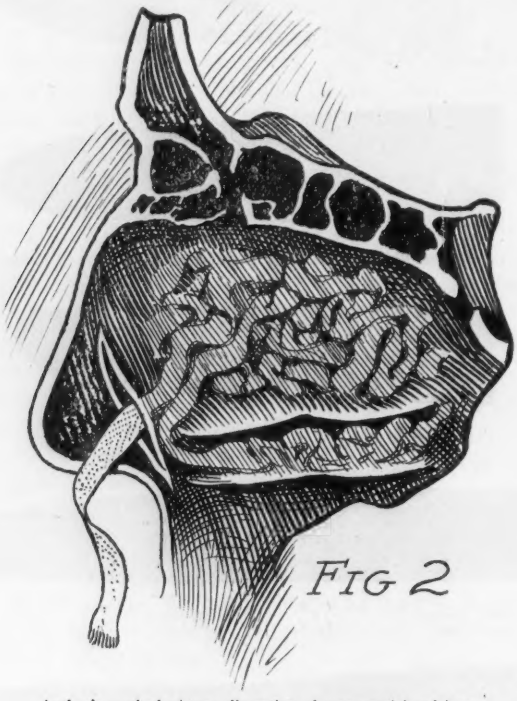


Extra Nasal Portion Cartilage Bone

Fig. 1. Drawing and Photographs of Resected Septa.

However, there are many difficulties entailed in this operation that require skill and judgment to overcome, and I hope that to-day's discussion will clear up many of them.

First. About the first difficulty that one meets is after incising the mucous membrane, especially if very anteriorly, is to dissect up the muco-perichondrium. This difficulty is best overcome by the



Author's method of tape dissection of muco-perichondrium.

use of Freer's sharp elevators. This portion of the septum is also very difficult to anesthetize by topical application of cocaine. The patients complain some until the first step is completed. I find that a few drops of eucaine solution with adrenalin, half to one per cent., injected by the Schleich method, assists in this procedure.

Second. The muco-perichondrium is, as a rule, very firmly adherent to the maxillary ridge, and the closer to the floor the more difficult to dissect. Oftentimes at this step the membrane is torn

by the various dissectors, and a great deal of time is necessary to liberate the ridge.

I have been using an admirable method of dissection which these drawings indicate (Figs. 2 and 3), namely, I take a very narrow tape and introduce it into the little pocket made by the first dissection of muco-perichondrium, and with one of the small elevators pack quite firmly between the cartilage and muco-perichondrium as far

Author's method of tape dissection of muco-perichondrium.

back as desired, above the ridge, and another strip below it. In this manner one does a blunt, safe and bloodless dissection, being less disagreeable to the patient than the elevator. After the cartilage is cut through, and to overcome the danger of cutting the mucous membrane on the opposite side, I use a wedge-shaped septum knife (Fig. 4). I again introduce the tape and pack until the muco-perichondrium is entirely lifted off as far as necessary. When these procedures are completed, I remove all the tape and the

muco-perichondrium on both sides balloons out so that the introduction of the swivel knife is very easy.

Third. In cases where an operation such as removal of the ridge or spur, has been performed before, it is most difficult to peel off this layer of scar membrane, and most of the time it is torn in shreds in this procedure.

Fourth. The cases where there existed an old catarrhal ulceration, healed out by the usual cauterization method, afford another difficulty in dissecting off this portion of the mucous membrane.

Fifth. It is the custom of most operators to work from the convexity, no matter what side it be on. However, one of the difficulties is to operate from the right side.

Sixth. I was confronted once with this particular difficulty that may never occur again: In a case of a man with a marked deviation of the cartilaginous septum to the right, causing almost complete nasal obstruction on that side, and associated tubal catarrh,

Fig. 4. Author's Wedge-shaped Septum Knife.

I had the following pathological condition to consider, bleeding polyp on the left side of the nose. The merest touch caused very free bleeding. A scar on the dorsum of the nose from an operation performed by a so-called beauty doctor for cosmetic purposes, he having removed a hump. You observe that I was compelled to work from the right side of the patient, owing to the bleeding polyp, and had to be very careful not to remove too great an extent of the septum for fear of a possible sinking-in of the nose, inasmuch as I did not know exactly what was done by the cosmetic doctor.

Seventh. One of the greatest difficulties with me is the removal of the bony septum. The little maxillary ridge can easily be removed by various methods. Mine is by the use of an automatic chisel. But it is the posterior portion of the bony septum that I am speaking about. The instruments that are in use at present are either not strong enough or so small that one must enter between the muco-perichondrial layer, very frequently, or so large as to obstruct one's vision and endanger the muco-perichondrium. The

Foster-Ballenger forceps up to the present time answers the purpose best; but, as said before, it obstructs the vision and I have been working in this line to overcome this difficulty.

Eighth. After all the septum has been removed that is necessary and the flaps brought back in apposition, there often arises a difficulty in keeping them in this position while packing the nose. I find that I can very easily overcome this difficulty by introducing my speculum clamp (Fig. 5) until the packing is completed.

Ninth. All of us see cases that are spoken of as cocaine poisoning, shock, fright, etc., and certainly it is one of the difficulties during this operation, since most of us have the patient sitting up. The best way to obviate this difficulty is to be ready to recline the patient, or put him on the table at once, and go right on with the operation. Of course, the source of light is the most important

Fig. 5. Author's Speculum Clamp.

point in this procedure, and the Kierstein lamp is the one I have been using with satisfaction.

Tenth. If during the progress of the operation, one should perforate into the opposite side of the nose, there arises the difficulty of continuing the dissection of the membrane, and I am accustomed in such instances to terminate the operation at this point, allowing the conditions to heal, and operating eventually at another time, possibly from the other side.

Eleventh. I have had a case of a bleeder, whose condition I did not know until I made my incision, and after repeated application of adrenalin and pressure, was unable to check the hemorrhage long enough to go ahead with the operation. That case I never did operate upon a second time, and it may be counted another difficulty in this operation.

There are certainly many more difficulties that arise, but I believe that I have mentioned the principal ones.

So far as the technique of the operation is concerned, I believe that each case presents certain peculiarities that are present before and develop during the operation, so that one has to judge for himself; besides, each man has his own particular methods and instruments to his liking. My technique has been about as follows:

1. Thorough cleansing of the vestibule.
2. Douche with a mild alkaline antiseptic solution.
3. Cocainization by 20 per cent. Solution and adrenalization, 1-1000, both sides from five to ten minutes. Also subperichondrial injection by Schleich method of eucaine and adrenalin to the most anterior portion of the septum.
4. Application of the operative nasal speculum.
5. Incision, usually the Killian, of the muco-perichondrium, in front of the deviation.
6. Dissection, first, by Freer's sharp elevators, then by tape packing.
7. Incision through the cartilage.
8. Separation of muco-perichondrium on the opposite side by packing with strips of tape.
9. Removal of the packs and introduction of the swivel knife, and removal of the cartilage.
10. If a ridge is present, remove by automatic chisel.
11. Removal of bony septum by bone forceps.
12. Readaptation of the flaps.
13. Introduction of clamp to hold flaps in position.
14. Packing the nose lightly with vaselline-covered gauze.

The After-Treatment: The removal of the gauze the next day is facilitated by first spraying it with a warm alkaline solution. If the flaps are not yet adherent, I repack the same as after operation. Usually after the third day I leave off the packing and use mild cleansing solutions for a few days. As a rule, after one week or ten days the patient is discharged as cured.

In case some of the mucous membrane has been destroyed, or if not perfect adaptation has taken place, a granulating area may be present, which usually heals very easily a few days later by the use of nitrate of silver cauterization.

The complications that may or do arise are:

1. Infection, either primary or secondary, as extension to the sinuses, naso-pharynx and middle ear.
2. Hematoma.
3. Hemorrhage, primary or secondary.
4. Perforation.
5. Sinking-in of the nose.

The first complication, namely, infection, is very rare compared to that following other methods of operating, and I have had but two cases, and both where I had used a stitch to hold the flap in apposition, and consequently have given up this procedure.

Secondary hemorrhage occurs usually from infection.

Hematoma has occurred in cases where the flaps were not properly held in approximation by good packing.

Perforations are complications that follow in one's early experience with this operation, when not using the proper instrument, or oftentimes unavoidable in conditions mentioned before, over great prominences, ridges, or sharp concavities, with firm adhesions of the mucous membrane, and with very thin membrane.

Sinking-in of the nose I have never seen following this operation, but I have seen it follow an Asch operation. We are told to leave a small portion of the cartilage, about one-fourth of an inch along the anterior portion of the septum, from the junction of the nasal bones to the tip.

The indications for this operation are those of nasal obstruction to breathing; ventilation of the sinuses, and middle ear; also to correct certain nasal deformities.

The contraindications are those that would contraindicate any nasal operation, for instance, infection about the nose, hemophilia, marked general debility, etc.

Up to the present time I have performed the submucous operation 87 times, with good results.

100 State St., Chicago.

RESULTS OF OPERATION UPON THE NASAL SEPTUM BY MEANS OF VARIOUS INCISIONS.*

BY J. F. BARNHILL, M.D., INDIANAPOLIS, IND.

My paper on this division of the subject of septal operations will be based largely upon my own personal experience in nasal surgery. At the time of my debut into this field of practice, the following were the chief surgical procedures that were available for septal operations: Blandin's punch, which so perforated the septum as to leave a permanent opening through it; Adams' operation, which consists of making an incision along the whole crest of the flexure, and then forcing the septum into line where it was held in place by mechanical means until union of the incised and crushed parts took place; Steele's operation, in which the multiple knives of a forceps made the stellate incision through the septum, after which it was replaced as in the Adams' operation; Ingal's operation in which the deformity was partially dissected out by sub-mucous procedures, and which seems to have been the earliest of all sub-mucous methods; Jarvis' transfixion needle and snare, by which the cartilage was cut away by means of the cold wire snare; The Roe operation; the Roberts' operation performed by incision and fracture of the part, and subsequent support by means of a pin driven through the nose, or by ivory plugs worn in the nostrils; and finally the Bosworth operation by means of a nasal saw.

Bosworth's book, issued in 1888 so earnestly and convincingly advocated the use of the saw as the most logical and successful method of dealing with septal deformities that I very naturally followed this able teacher from the beginning, and have continued to do so in selected cases ever since. Bosworth seemed not to distinguish between cases of uncomplicated deflection and those of uncomplicated thickening which constituted nasal spur. So far as one was able to judge from his description of this saw operation, this author employed the one instrument in every case regardless of the class of deformity to which it belonged.

I have not kept a complete record of the actual number of cases of septal deformity that I have treated during my whole experience in nasal surgery. I feel safe in estimating the number as high as

* Read before the American Laryngological, Rhinological and Otological Society, Kansas City, June 11, 12 and 13, 1906.

two thousand, but believe in fact that it will greatly exceed that number. Neither have I an accurate record as to the number of successes or failures resulting in these cases, but I do have the unmistakable feeling and belief concerning this point, namely, that the percentage of cases that were satisfactorily relieved or entirely cured by the use of the nasal saw is as great, I am even ready to say greater, than has resulted from any other nasal operation I have ever performed. Of course, it should be understood, that when I speak of relief or cure in this connection, it is meant that such result was attained, frequently from combined operations upon the turbinates or ethmoid as well as upon the septum. However, the cure in so far as the septum itself was a factor, was complete from the mere saw operation, inasmuch as the obstruction was thereby removed, and complete healing of the operated area was satisfactorily accomplished.

As might be expected, my greatest number of failures occurred in my earliest cases and before I had learned to select with accuracy those for which the saw operation was most certainly the proper procedure, for it is needless to say that the nasal saw never was, and never can be a proper instrument to use for the correction of any very considerable percentage of septal deformities. From the first I never considered it of value in the purely deflected type of septum, hence never used it to correct such irregularity, and consequently have no bad results to report therefrom. It was in the septa, however, where there existed a spur in addition to a deflection that I met with difficulty or failure, because in my desire to remove as much of the obstruction as possible by means of the saw, I sometimes cut too deeply and thereby caused a perforation. More extended experience enabled me to avoid this accident and for a long time I have witnessed no such occurrence.

Of the Bosworth or saw operation, I desire to say that no newer procedure has supplanted it in my estimation either for ease of performance or satisfaction in results. But it is only applicable to cases of simple spur, or to those where but slight deviation complicates such a spur.

Until 1893 I attempted the correction of all uncomplicated septal deflections by the method of first using the Steele stellate septal punch, subsequently pushing the deflected portion as nearly into the median line as possible, and then retaining it in position by means of the Roberts' pin. The result was in no case absolutely satisfactory and the most perfect outcome obtainable by this measure would compare most unfavorably with those now more easily se-

cured by the Asch operation or any of the several methods in use for sub-mucous resection. Some of the cases were entire failures owing perhaps, somewhat to my lack of experience, but largely as I believed at the time, to the fact that the punch or stellate forceps of Steele broke up the resiliency of the septal cartilage over too small an area, and too imperfectly, and the consequence was that the Roberts' pin which was supposed to support the septum in its new position until union of all the cut surfaces had taken place, was crowded upon to the extent that the part of the pin which was imbedded in the cartilage and soft parts of the structures, and emerged externally somewhere near the attachment of the nasal cartilages to the nasal bones and superior maxillary spine, was gradually forced outwardly, the shaft of the pin cutting its way through all the intervening tisues, until the septum finally reached a position almost if not quite as bad as that occupied by it before the operation. The results that were obtained when splints were used to hold the septum in place after it had been first incised by the Steele's punch were no better, because the resiliency of the septal cartilage not having been sufficiently overcome by these preparatory incisions, splints of whatever shape or material were too painful to be long endured, and produced ulceration upon the height of the convexity of the septum which in some cases caused adhesions to the opposite turbinate.

In 1896 Gleason pubished his method of making a longitudinal incision through the septum along the whole lower portion of the deflection, cutting entirely through the cartilage and mucous membrane on both sides, after which the lower edge of the deflected part was pushed through the slit thus provided, by which means the deflected portion was brought more nearly into the central line, and therefore divided the nostrils more equally. I have performed the Gleason operation many times. Quite a number of those among my first experiences were failures, owing largely to the fact that the Gleason operation is not suitable for every case of deflection, since in those patients presenting a septum which was uniformly regular and bow-shaped, if viewed in transverse section, it was always difficult and often impossible to lock the lower margin of the upper segment of septum in its new position, until adhesions would have time to form that would hold it there permanently; and when held in proper position by a splint of any kind, in many instances the mucous surfaces of the opposing upper and lower portions of the septum were crowded apart to the extent that such an adhesion was an impossibility. However, in cases where the septum

sprang from its articulation with the superior maxilla in the median line, and the deflection did not begin to show before a height of from four to six milimeters above this point, and then perhaps assumed the angular variety of deflection, the conditions were ideal for the Gleason procedure, and my results under such circumstances have been invariably satisfactory to both patient and myself.

Five years previous to the publication of the Gleason operation, Asch and Mayer of New York, advocated the performance of what has since become familiar to all as the Asch operation. Having tried this method successfully on cases in which the Gleason operation proved a failure, I was led for a short time to employ it in all cases of deflection. However, meeting with several partial failures, and learning of similar results in the experience of others, I was ready to abandon the method until it was my privilege to witness the technic of the procedure during several operations performed by Mayer himself, at which time I was impressed with the fact that in the steps of cutting and breaking the fragments of the septum preparatory to placing it into its proper position, the originator of the operation was much more thorough than I had been, and that my failures had resulted, as I was already aware, from the fact that the cartilaginous resiliency had not been sufficiently destroyed.

After thoroughly learning and more correctly applying the principles upon which Asch and Mayer depended for success in permanently straightening deflected nasal septa, my results with this procedure were usually so good as to be satisfactory to all concerned. The outcome of a series of cases was better at least, taken as a whole, than was that of any other method used for the correction of septal deflection. My failures with the Asch procedure occurred in cases that presented a spur at the crest of the deflection, and also in those cases in which the deflection was high and included the perpendicular plate of the ethmoid; or if lower down, extended far back upon the bony septum. In these latter cases, my fear of injury to the cribriform plate no doubt was responsible for imperfectly comminuting the deflected portion, and was responsible for consequent failure to completely overcome the resiliency.

While therefore some of the methods of the recent past that have been in common use for the correction of septal deformities have proven in my hands a failure, others have been satisfactory provided the cases were properly selected, the operation skillfully performed and the after attention given its proper consideration.

And whereas more time and patience were often required to secure such results than are necessary when employing the more modern methods, nevertheless the final outcome in properly classified cases, has usually been such as to compare quite favorably with that secured by means which leave the mucous membrane intact. Some of these older operations have therefore a certain worth, and are today both trustworthy and expedient in selected cases.

323 North Delaware Ave.

Primary Jugular Bulb Thrombosis in Children as a Complication of Otitis Media Purulenta Acuta, with Report of Cases. By JAMES MCKERNON. *N. Y. Med. Journ.*, July 1 and 8, 1905.

Six very interesting cases are reported of this serious complication; a condition frequently overlooked, with fatal termination. Four of the author's cases recovered without ligation or resection of the vein, though the author himself remarks that in the average case of sinus or bulb thrombosis it is wiser to ligate and resect the vein if the patient's condition will admit of it.

The above complication occurs not infrequently in young children, when the bony covering of the bulb is very thin, and infection may occur by absorption through the thin bony floor of the middle chamber. The diagnosis is made chiefly from the wide temperature range, closely following an acute purulent otitis. All other diseases must be eliminated before a positive diagnosis can be made. The temperature may remain low for several hours, then suddenly rise from four to six degrees. During the low temperature the patient may feel quite comfortable but we must not be misled by the seeming improvement. Prompt surgical intervention is indicative.

LEDERMAN.

THE TREATMENT OF PERFORATIONS OF THE NASAL SEPTUM.

BY M. A. GOLDSTEIN, M.D., ST. LOUIS, MO.

It is an interesting observation that in this period of prolific literature on rhinology, so little attention has been directed to the question of perforations of the nasal septum and their most satisfactory disposal. The clinical picture of a nasal septum in which, through trauma, mechanical irritation, local specific lesions, or other ulcerative processes, perforations of the quadrilateral cartilage has resulted, is familiar to all of us. When such a perforation is accompanied by constant incrustrations, and often foul smelling secretions forming about the edge, it becomes a matter of considerable irritation and annoyance and often nervous anxiety to both the patient and his medical advisor. These annoying conditions can be aggravated to such an extent that they resemble in mechanical aspect the stubborn crust formations of atrophic rhinitis, and it would be superfluous to cite here the many attempts that have been made in past years to correct or overcome this *bete noir* in the treatment of atrophic rhinitis; I need only add that it has been equally as prevalent a stumbling-block in the disposal of perforations of the septum.

Whatever the etiology of septal perforations may be, whether due to syphilis, tuberculosis, or idiopathic ulceration, constant picking of the nose, accidental or deliberate injury to the mucosa and cartilage during operative procedures on the septum, the result is nearly always the same—a perforation, varying in size, shape, and position, located in the quadrilateral cartilage, the edges thickened, and constantly crusted with partly dried and enfoliated epithelium and mucous, and in most instances showing a tendency to frequent bleeding and crusts about the entire circumference of the perforation.

If a careful inspection is made of such a perforation, it will be found, when the crusts are removed, and the parts thoroughly cleansed that the mucosa covering the nasal cartilage has been retracted on both sides from the edge of the perforation about the greater part of its circumference, and that the cartilage projects beyond the mucosa edges.

* Read before the American Laryngological, Rhinological and Otological Society, Kansas City, June 11, 12 and 13, 1906.

To illustrate this point, I have dissected a perforation in the cartilage of the nasal septum of the sheep. I have empirically demonstrated the cartilage in its clinical aspect as standing out free beyond the edges of the mucosa on either side of the septum, and it is on this observation that I wish to lay especial stress. It is this feature, clinically and pathologically considered, which prevents the spontaneous healing of the sides of such a perforation. In the regeneration or reconstruction of the mucosa, Nature makes the attempt to heal such edges smoothly, and wherever this can be accom-

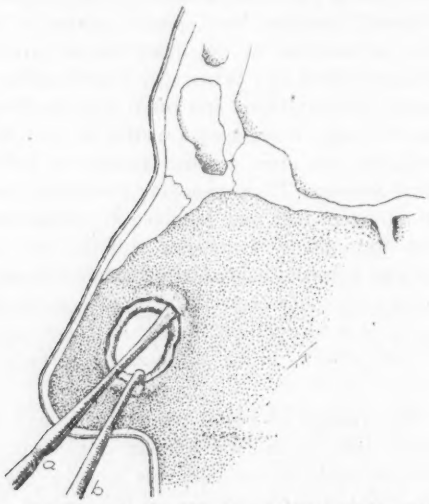


Fig. 1. Diagramatic representation of perforation showing projecting rim of cartilage with straight and bent elevators in position.

plished, the patient is not troubled by the distressing crust formation, and the perforation requires no attention. In the majority of cases where such incrustation exists, the cause of the trouble can be found in this projecting edge of free cartilage which prevents the natural union of the opposing edges of mucous membrane.

Acting on this observation, and aided by the recent activities in the technique of submucous dissection, it occurred to me that if this free edge of cartilage which formed the circumference of such a perforation could be removed to a sufficient extent to allow the juxtaposition of the mucous membrane on either side of the cartilage,

a smooth union could be produced, and the cause for the ever-present and annoying crusts and scabs would thereby be removed.

In the second specimen of dissected sheep septum which I present herewith, the technique which I have devised for this purpose is illustrated. This consists of elevating the mucous membrane on both sides of the septum for a distance of about one-quarter of an inch from the free edge of the mucous membrane along the whole circumference of the perforation. A rim of cartilage is then cut away from between the two mucous surfaces about the circumference of the perforation, so that the mucous membranes can be approxi-

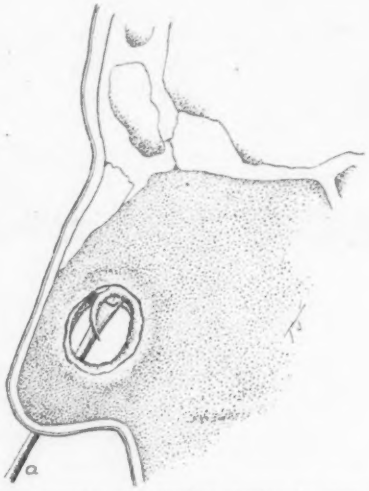


Fig. 2. Diagramatic representation of perforation showing the single tine swivel knife in position removing rim of denuded cartilage.

mated without any further interference from the partition of cartilage. Union of the two mucous membranes then readily takes place, so that a stump of mucosa is formed about the free edge of the perforation throughout its circumference. There will now be no further possibility of crust formations, as the mucous membrane is smooth throughout its extent.

In my earlier cases, I have used several forms of small right-angled knives but the technique was rather tedious and the edge of the cartilage was left rather irregular. This has been obviated

very materially in my subsequent work by the use of the Ballenger single-tine swivel-knife. I am now enabled to cut away the rim of the cartilage smoothly and equally distant from the mucosa edges along the whole circumference of the perforation. In elevating the mucous membrane in the superior, inferior, and posterior

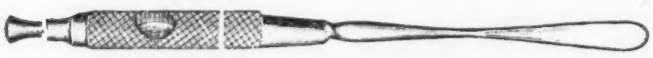


Fig. 3. Freer's sharp elevator.

aspects of the circumference, I use a straight Sharp Freer elevator, because of the small size and delicacy of this instrument; in dissecting the anterior part of the circumference, I use the same size elevator with the operating edge bent forward in an acute angle.

Fig. 4. Author's bent elevator designed for detaching mucosa along anterior edge of perforation.

The single-tine swivel-knife I have found the most satisfactory instrument for cutting away the rim of cartilage. It would be a practical impossibility to use the double-tine knife for the anterior segment of the circumference of the cartilage.

Fig. 5. Ballenger's single tine swivel septum knife.

The results of this operation in the series of cases where it has been undertaken, have been uniformly successful, and the primary object of removing the cause of crust formation accompanying septal perforations, has been attained.

3858 Westminster Place.

THE TEACHING OF LARYNGOLOGY IN THE HARVARD MEDICAL SCHOOL*

BY HARRIS PEYTON MOSHER, M.D., BOSTON, MASS.

Laryngology was first taught in the Harvard Medical School as a part of Clinical Medicine. It was taught as a special subject first in 1866 by Dr. H. K. Oliver, one of the visiting physicians of the Massachusetts General Hospital. In 1872, Dr. F. I. Knight, while in Europe, was made instructor in Percussion, Auscultation and Laryngology, and on his return established a clinic confined to these subjects. This was the first clinic in New England to include laryngology. Instruction in this branch was largely limited to teaching the methods of examination; diseased conditions received attention only incidentally. Daily sessions of the class were held for two weeks. There was no examination. Courses for graduates were added the next year. In 1879, after seven years instruction along these lines, percussion and auscultation were separated from laryngology and the title of the teacher became instructor in laryngology. In 1880, Harvard established a voluntary fourth year. Dr. Knight gave a course to the class of that year, consisting of three exercises a week for two months. The instruction was both clinical and didactic, and was followed by a written examination. In 1882, Dr. Knight was made Assistant Professor and in 1886 Clinical Professor. Associated with him was Dr. F. I. Hooper as instructor. By this time not only were the methods of examination taught but the whole field of diseases was covered by systematic lectures, by demonstrations and by the clinical use of patients. In 1892 Dr. Knight resigned. His place was taken by Dr. Hooper. In this same year Dr. Hooper died. These were serious losses.

The period covered by the three men just mentioned marks a special point in the tide of affairs of laryngology at the Harvard Medical School. Of these three men the two elder are living, the youngest, Dr. Hooper, is dead. All three deserve more than the brief statistical references which have just been made to their names. Dr. Oliver no longer practises, but he maintains a lively interest in his specialty. He is still a cosmopolitan and so a traveller. At the present time he is abroad. It was he who brought home from

* Most of the statistical information in this article was furnished to me by Dr. A. Coolidge, Jr., and is often given in his own words. For his kindness in placing this material at my disposal I wish here to thank him.

Paris the steel mirrors which were first used for laryngoscopy. In the collection of early instruments which he gave to the Massachusetts General Hospital a few years ago these mirrors were found to have retained their original high polish. Dr. Oliver was one of the first to substitute the glass mirror for the metal mirror. Laryngology has always called for deftness of eye and hand. Almost always also the men practising it have had the mechanical and

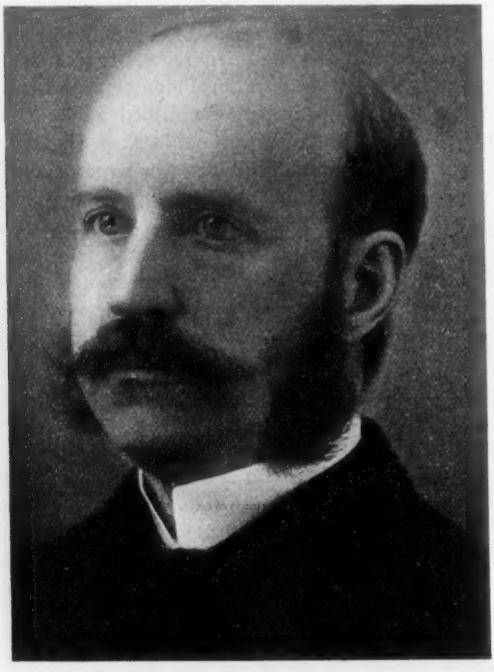


Plate 1. F. I. Hooper, M.D.

inventive faculty strongly developed. Dr. Oliver was a marked example of this. He made many of his instruments and amalgamated all his mirrors. A number of his appliances were very ingenious and have a distinctly modern air. For example, he adapted the ordinary dark lantern, or bull's eye lantern, which today is heard of but little except in juvenile literature of a certain type, so that it was adjustable to the common household lamp. It could be folded compactly and carried in the physician's visiting bag. The lens as

you see from the photograph could be moved forward and back in order to focus the light. In these early days, much attention was paid to auto-laryngoscopy. This lamp carried at the side of the lens an adjustable mirror for this purpose. Dr. Oliver had a tolerant pharynx and his enthusiasm was such that he had all the students in turn examine his larynx with a very large triangular mirror. The instruments which Dr. Oliver gave to the memorial room for Dr. Hooper at the Massachusetts General Hospital are of great interest to anyone who wishes to look up the history of our laryngological armamentarium. No better and no more charming way of getting a picture of the beginning days of laryngology could be asked for than the opportunity of a talk with Dr. Oliver in a comfortable corner of the St. Botolph Club, which he makes his Boston home.

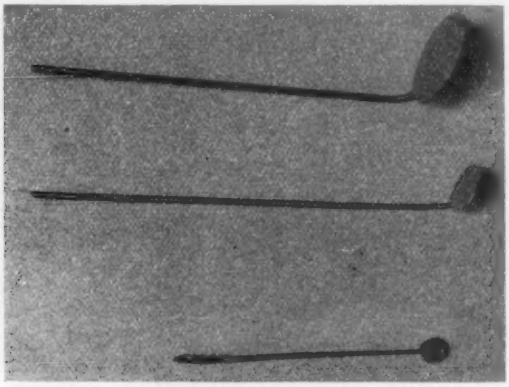


Plate 2. Steel mirrors. The smallest mirror was used to examine the trachea through a tracheotomy wound.

Dr. Oliver was succeeded by Dr. Knight. Today Dr. Knight is still in active consulting practice. The early association of laryngology with auscultation and percussion is reflected in his work. Much of his practice has to do with diseases of the chest. Dr. Knight rapidly went through all the grades of academic promotion from instructor to full professor. No one since his time has had his ambition in this respect gratified so quickly and so fully. In addition to his rounded academic career Dr. Knight has the distinction of being one of the founders of the American Laryngological Association.

Dr. Hooper was very much beloved. His career was brilliant; his early death tragic. His wide reputation has never been equalled by any one in the Harvard Department of Laryngology. Dr.

Hooper inherited culture and added to it by his training at Harvard University and on the Continent. He was a man of independent means, and he had a scientific and an original mind. When to all these qualifications are added the desire and the ability to work, you have the ideal medical man. Such a man was Dr. Hooper. He is best known by his experimental work on the physiology of the larynx, with especial reference to laryngeal paralyses. His models and his anatomical preparations and charts show how thoroughly he illustrated his lectures. He invented a number of instruments which are in constant use today—namely his laryngeal curette and his polyp and tonsil snare. Upon the ecraseur effect which it was possible to obtain with this he laid especial stress.

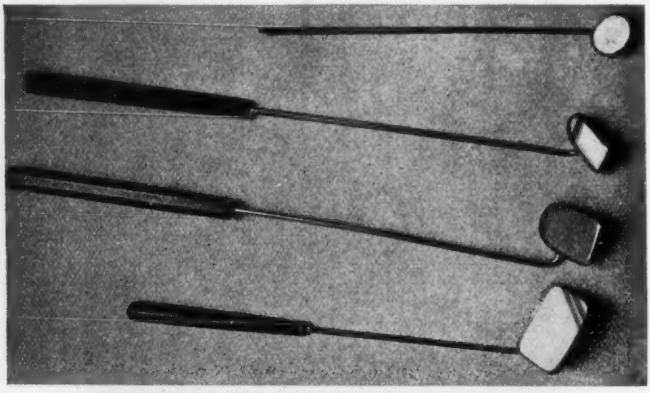


Plate 3. Early forms of glass mirrors.

In going about in other clinics I have been surprised to find how slight the snares were in some and how large, even verging upon clumsiness, they were in others. By adding Peter's loop forming canula to Hooper's instrument, it becomes, to my mind, an ideal universal snare. I have never had it fail to cut wholly through a tonsil.

Dr. Hooper imported the adenoid operation into Boston and its vicinity. He operated with torceps and with the patient in the sitting position. Constant swabbing was necessary in order to keep the blood from entering the trachea. This meant that it was a long operation, often taking an hour. Also it was disquieting. The surgeons of the general staff used to stand by in the early days and predict disaster. As far as I can learn it never came, and the oper-

ation soon became well established. The constant swabbing which marred the original method of operating was done away with by a suggestion of one of Dr. Hooper's assistants, Dr. J. P. Clark, now one of the senior physicians of the Throat Department of the Massachusetts General Hospital. He suggested the expedient of bringing the head forward so that the blood from the vault of the pharynx could run out of the nose, and the blood from the tonsils

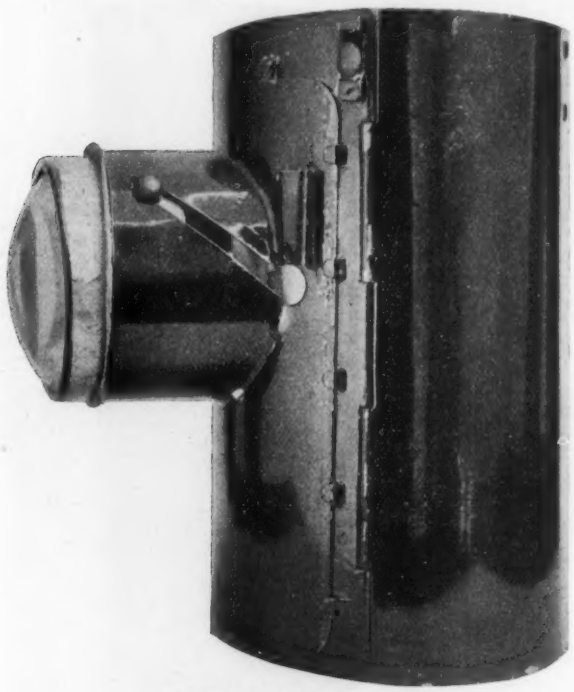


Plate 5 I. Oliver's Adjustable Lamp.

out of the mouth. This little manoevure made all the difference between quiet and tumultuous operating, between reasonably safe operating and operating where the danger of tracheotomy was always imminent.

The men who worked with Dr. Hooper were devotedly attached to him. According to one of them upon whom his mantle of good humor and good fellowship has descended his manner in the clinic was very sprightly. He assumed at times a sort of injured and

complaining air and spoke in a tone to correspond. This was so foreign to his nature as to be highly absurd and gave a touch of humor to his whole conversation. He had a keen sense of fairness, so keen in fact, that he always insisted that those who helped him should be paid regardless of whether he was or not. Often he was not, because he was very charitable. Since he was the first man in his locality to do the adnoid operation he was soon nearly swamped

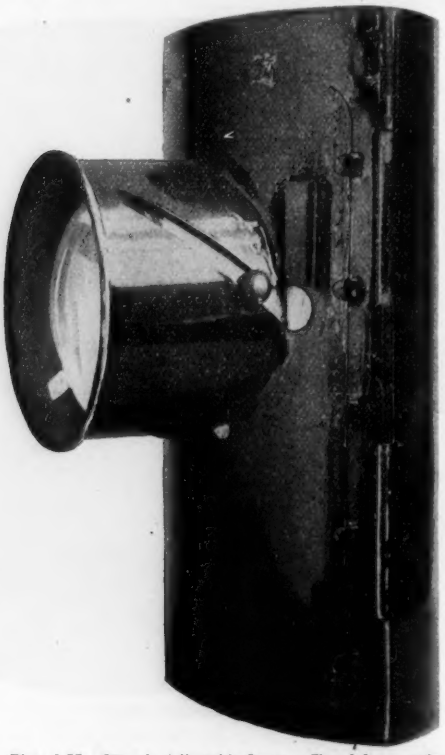


Plate 5 II. Oliver's Adjustable Lamp. Closed for carrying.

with cases of this kind. Stories bordering a bit on the marvelous are told of his full waiting room and patients standing on the steps. How long this happy condition of affairs lasted, history does not state, but the beginning laryngologist of today hears the story only to wish that history would repeat itself for his benefit. No one, however could be envious of Dr. Hooper, his sweetness and generosity made such a feeling impossible.

The end of this genial life was a peculiarly bitter tragedy. At the close of the first year that he was chief of the clinic he died of cancer of the tongue. Everything was done here and abroad to save him. Butlin operated on him in London. His last trip abroad

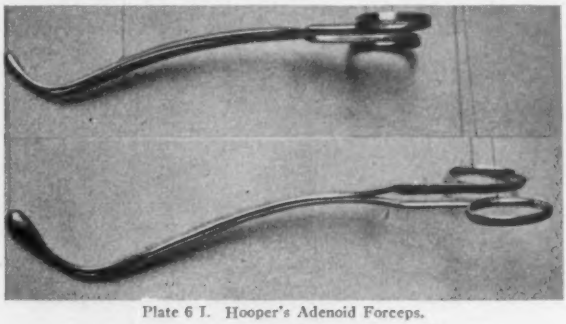


Plate 6 I. Hooper's Adenoid Forceps.

was to London again, only to learn that there had been a recurrence. He came home, shut himself up in his house and suffered uncomplainingly to the end. At one time the question of tracheotomy

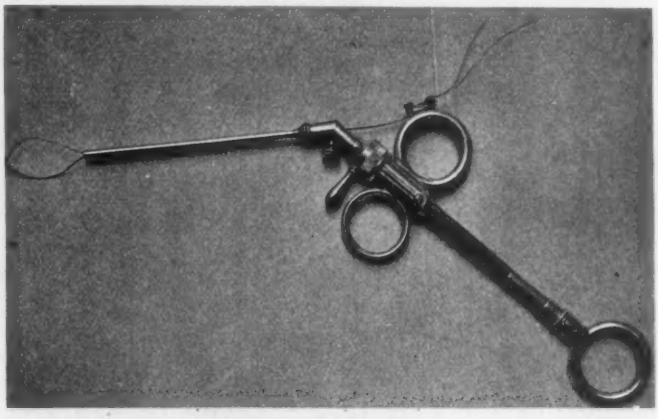


Plate 6 II. Hooper's Snare.

was considered. As it would only prolong the suffering for his family and his friends he refused to have it done. His funeral, like his life, brought crowds of people of every station and rank once more and for the last time to his side.

After the death of Dr, Hooper the instruction in laryngology was again put under the Department of Clinical Medicine. Drs. T. A. DeBlois, J. W. Farlow and A. Coolidge, Jr., were appointed clinical instructors and the work divided between the Boston City Hospital, the Boston Dispensary and the Massachusetts General Hospital. In 1895 with the establishment of the required four years course the second year sections were given up, and instead the subject was made compulsory and given in the first half of the fourth year. The class was divided into three sections, each section being alloted to one of the three clinics, where these were again subdivided so that each student received twelve hours of clinical instruction in a small section of five or ten. In addition to this clinical instruction the whole fourth class had one lecture a week or sixteen in the half year, which were given by the three instructors

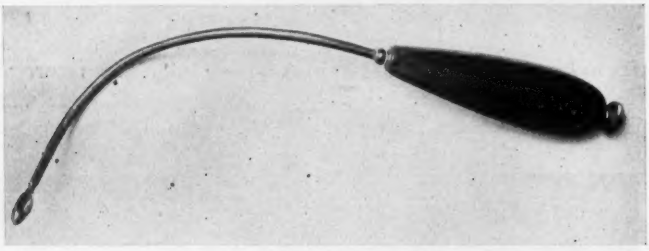


Plate 7. Hooper's Laryngeal Curette.

in rotation year by year. The second half year was used for graduate instruction only. This system continued until 1905 when the compulsory course was moved back to the second half of the third year and an elective established in the first half of the fourth.

This system of three instructors lecturing in alternate years lasted for ten years. The present year, 1906, the department has been put again under one head. Dr. A. Coolidge, Jr., has been appointed Assistant Professor. The present teaching force is as follows: Dr. A. Coolidge, Jr., Assistant Professor; Dr. F. C. Cobb, Instructor; Dr. J. P. Clark, Dr. J. L. Goodale, Dr. R. A. Coffin and Dr. H. P. Mosher, Assistants.

Dr. Farlow has resigned from the Harvard Medical School and from the Throat Department of the Boston City Hospital and he now divides his time between his practice and the Boston Medical Library. Of this he was last year chosen librarian. For many years Dr. Farlow in his annual trips abroad has brought back and

given to the library the latest books on laryngology. For this generosity the library and the specialists of Boston are very much in his debt. In his new field we, his brother specialists, hope that he will not forget the lesser interest of laryngology, in the larger interest of medical literature as a whole. Dr. Farlow not only has

Plate 9. Teaching the examination of the posterior nares with the mirror.

kept us in touch with the best foreign books but he has brought back and modified many instruments so that they bear his name.

According to the present plan, the greater part of the teaching of laryngology in the Harvard Medical School is to be done at the Massachusetts General Hospital, and the majority of the instructors

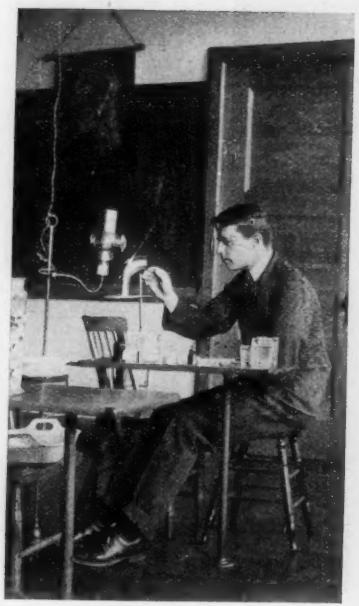


Plate 9 I. Using the manikin for instruction in the pathology of the larynx.

Plate 9 II. Teaching the digital examination of the vault of the pharynx.

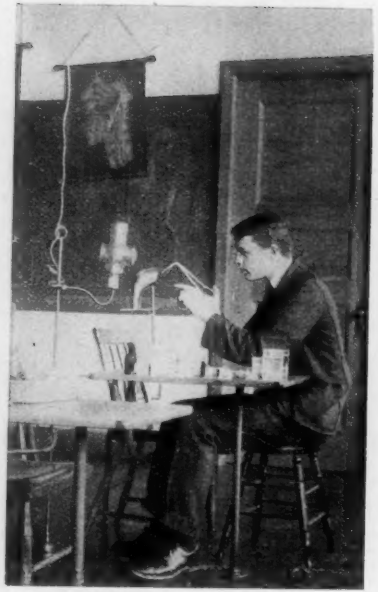


Plate 9 III. Practicing the removal of foreign bodies. In the manikin there is a wet specimen of the larynx.

are drawn from its staff. Up to this point this paper has been mainly statistical and historical. I wish now to give in some detail the scheme of teaching outlined for the year which is about to com-

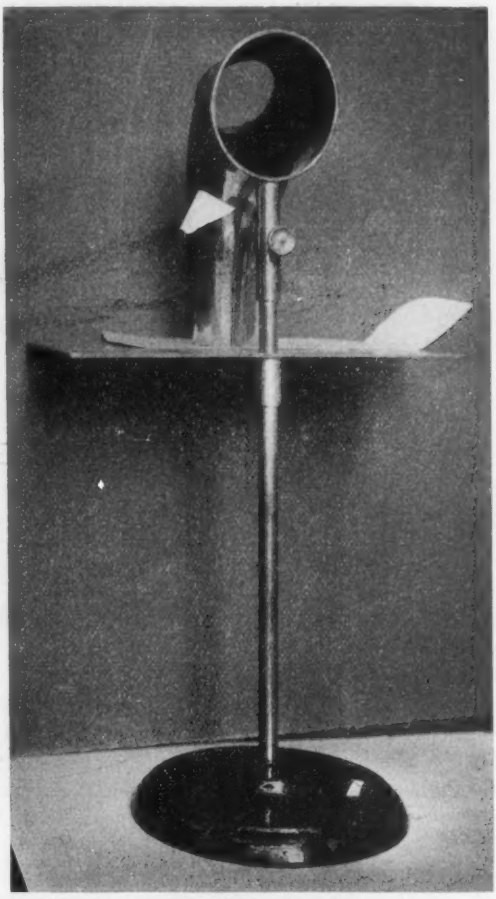


Plate 10. Manikin for teaching the pathology of the larynx. A wet specimen of the larynx can be placed in the manikin and used for practice in removing foreign bodies or for making applications to the cords.

mence. In order to do this I must refer to the organization of the clinic. The Throat Department is qaurtered in the new Out Patient building of the hospital. There is ample space, so that the

rooms devoted to teaching can be isolated from the clinic and allow the two to go on side by side without conflict. The accomodations might be called in many respects luxurious. Four years ago the new Out Patient building of the Charité Hospital of Berlin was opened. Soon after this I had the good fortune to work there. On my return I was gratified to find that the new appointments of the Throat Department of the Massachusetts General Hospital stood the comparison with this latest European clinic remarkably well.

In the Throat Department of the Massachusetts General Hospital three men are on duty at once for a period of six months. Two house officers who act as head assistants are on duty for the same

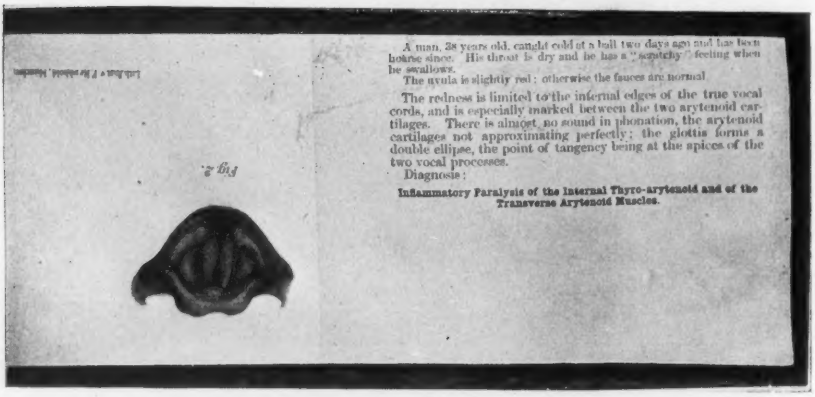

A man, 38 years old, caught cold at a ball two days ago and has been hoarse since. His throat is dry and he has a "scratchy" feeling when he swallows.
The uvula is slightly red; otherwise the fauces are normal.
The redness is limited to the internal edges of the true vocal cords, and is especially marked between the two arytenoid cartilages. There is almost no sound in phonation, the arytenoid cartilages not approximating perfectly; the glottis forms a double ellipse, the point of tangency being at the apices of the two vocal processes.
Diagnosis:
Inflammatory Paralysis of the Internal Thyro-Arytenoid and of the Transverse Arytenoid Muscles.
Fig 2.

Plate 11. A case sheet for use in the manikin.

period. Then three more men and two more house officers come on and finish out the year. It is becoming the fashion, I am pleased to say, for men who have served as house officers in the main hospital to take this six months appointment. In like manner, men from the neighboring Massachusetts Charitable Eye and Ear Infirmary are supplementing their work in that institution by taking this same appointment. Up to the present time home talent has been sufficient to keep these places in good demand. There is no reason, however, why these places should not be open to men from other cities who are training for the specialty of laryngology. The Massachusetts General Hospital is the consulting hospital for the most of New England. Since it draws from such a large area the variety of cases to be found in its throat clinic is as large as can

be found in any European clinic. There are many larger clinics of course, and many special clinics can give a greater number of cases of the diseases to which they especially cater, but it would be hard to find a clinic which has a larger variety of cases, both minor and major, than is seen in this clinic.

In the suite of rooms used by the throat clinic one room has been fitted up as a staff room and library. It is known as the Hooper Room in memory of Dr. Hooper. In it is a working library for the staff and for students. There is a librarian whose duty it is to keep in touch with current literature, to catalog it and to help and guide the students in the preparation of the papers which they are required to write upon some throat subject. The Hooper Room contains a collection of early instruments. Many of these, as I mentioned previously, were given by Dr. Oliver. In this collection all forms of mirrors from the first steel mirror to the modern aseptic mirror are shown. In addition, there is a set of snares illustrating the evolution of this instrument.

There is no better way of showing what this clinic has to offer the fourth year student and the graduate than to summarize the tabular view of the teaching of laryngology for the coming year. According to this, graduates and fourth year men are to be taught together. In assigning the practical work a man's previous experience will determine the class of cases which are given over to him personally. In this way the inequality between fourth year men and graduates, where it exists, is bridged. The fourth year elective, then, and the course for graduates consists of daily exercises for two months. Didactic lectures covering the field of diseases of the nose, throat and larynx are given by Dr. Coolidge and Dr. Cobb. Dr. Goodale gives eight exercises on pathology and Dr. Mosher a like number of exercises on antomy. The applied anatomy of the accessory sinuses will be dwelt upon including naturally a clinical exercise on sinus operations and a demonstration of a series of X-ray plates showing their applicability to sinus work. As Dr. Coolidge's name is prominently associated with bronchoscopy this subject is covered by him.

A practice which was begun last season, namely the holding of a clinical meeting of the staff on the last Saturday of each month, will be continued. At these meetings cases of interest which accumulate during the month are shown and discussed. Occasionally short papers are read. From time to time men from other departments take part in the exercise by invitation. For example last year the dermatologists took part in a joint discussion of the treat-

ment of syphilis. The reports of these clinical meetings according as the material lends itself to such use or not, are published. These meetings in a measure supply the place of a laryngological club. Boston as yet possesses no club devoted exclusively to laryngology.

Laryngology, as has been said, is now a required subject in the curriculum of the Harvard School. It is taught in the second half of the third year. I have just spoken of the voluntary fourth year course. The men in the required course have one lecture a week for four months, that is sixteen in all. The class is divided into sections and the men receive eight exercises apiece either at the Massachusetts General Hospital or at the Boston Dispensary. The aim is to teach the findings of normal laryngoscopy and to make a start in familiarizing the men with the commoner diseases. In the fourth year the student can take the elective course and get a good beginning in this specialty.

For the last three years a course has been given in the Anatomy Department by Dr. Mosher which is designed for graduates and specialists. It covers the same ground as the courses of Hajek of Vienna and Kopsch of Berlin. It is given evenings and takes a month to complete. It treats systematically the applied anatomy of the nose, throat and the larynx. The anatomy of the sinuses is dwelt on in detail. This part of the subject is illustrated by a full series of wet and dry specimens showing the variations of the sinuses. As the course includes a dissection of the head and neck the number of times that it is given depends upon the amount of material available. In the progress of the dissection the routine operations on the nose and the accessory sinuses are done on the cadaver. The methods of examination of the trachea, the bronchi, and the esophagus by the bronchscope and the esophagoscope are demonstrated. This course furnishes to graduates opportunities which they have been accustomed to seek abroad. Men from other cities are already coming to Boston with this course in view. Since the exercises are held at night the student has his mornings free for work in the special clinics.

In the teaching of the established methods of examination of the throat and larynx the use of wet specimens is somewhat peculiar to the Massachusetts General Hospital Clinic. The photographs which accompany this article demonstrate this method so well that no detailed description is necessary. I have found the head sectioned as shown in Figure No. 9, the most satisfactory way of making the picture obtained by the rhinoscopic mirror quickly in-

telligible. The preparaton is so cut that the student sees the objects from the front which his mirror gives him a picture of from behind. He sees both ends at once. This preparation is invaluable for teaching the digital examination of the pharynx. By means of it a surgical picture of the vault, the fossae of Rosenmüller, and the openings of the Eustachian tubes is gained at the start. When the student, therefore, comes to the living, his examination means something and is not aimless but systematic. Even men who have been operating for some time show an interest in the examination of this special preparation which shows that a little brushing up of the finger tip examination under the guidance of the eye is not time wasted.

I wish to mention one more point in conection with methods and apparatus employed in teaching. Mannikins, simple and elaborate have long been popular for teaching the pathology of the larynx. By the use of this appliance the student can be furnished with a graduated course of what might be called paper pathology. This cannot take the place of the patient; but as a supplementary demonstration it is valuable. It has the advantage that it is always on hand and always tractable. Moreover it never has pressing business so that it has to leave the clinic before the students can be assembled. Figure No. 10 shows a simple mannikin which I have found useful. The only original feature about it is the broad shelf. This makes it possible to show not only the picture of a diseased larynx but by the side of the picture to have the printed history of the case with the diagnosis. By cutting up Grünwald's atlas of diseases of the larynx a very complete series of the ordinary disease can be obtained. As an exercise in diagnosis the plate can be used without the case history and the diagnosis posted up at the end of the morning.

It is a matter of congratulation now that the Harvard Medical School is starting upon a new epoch with its fresh equipment and beautiful new buildings that laryngology is an integral department in it. This birthday number of the Laryngoscope sends its greetings to one of the pioneers and one of the distinguished men in laryngology. The department of larygnology in the Harvard Medical School sends to Professor Fraenkel on his seventieth birthday greetings and heartiest congratulations.

828 Beacon St.

THE TEACHING OF LARYNGOLOGY AND RHINOLOGY IN THE MEDICAL DEPARTMENT OF THE GEORGE WASHINGTON UNIVERSITY, WASHINGTON, D. C.

BY CHARLES W. RICHARDSON, M.D., WASHINGTON, D. C.

The teaching of the above mentioned subjects in the institution which I represent is divided into a didactic and clinical course of lectures. The didactic lectures are twenty-four in number. In this course of lectures a thorough grounding is given in the anatomy bearing upon this subject and these lectures are elucidated by many well prepared dry and wet specimens. It is considered essential that the student should have a recent and thorough exposition of this part of the course to quickly comprehend the lecturer in the description of the various discussed conditions of the organs under consideration. The mechanical devices necessary for the inspection, diagnosis and treatment of diseases of these parts are then explained and their method of use described. Then follows a series of lectures upon the acute and chronic catarrhal inflammation of the upper air tract. These subjects are thoroughly and carefully considered as to their eitology; pathology; symptomology; diagnosis, both simple and differential; and treatment. Lectures are also given upon the specific inflammations, as tuberculosis and syphilis. The sinus diseases are described and the more effective methods of relieving them indicated. Further lectures are given upon foreign bodies, epistaxis and lymphatic hypertrophies as affecting the naso-pharynx, fauces and lingual region. A lecture is also devoted to the subject of new growths, special attention being given to the most common varieties of neoplasm and to spurs and deflection of the nasal septum.

The clinical course is divided into an operative course, a course of clinical demonstrations and a course of clinical demonstration of the infectious diseases of the upper air tract. The operative course consists of one clinic a week throughout the year, during which the many major operations, as presented, are demonstrated before the class. These clinics are conducted at the University Hospital and at the Episcopal Eye, Ear and Throat Hospital by the chief of the teaching staff. For the purpose of clinical demonstration, the class is divided into sections, which present themselves in rotation at the dispensary services conducted by the writer at the University Hos-

pital and at the Episcopal Eye, Ear and Throat Hospital four hours a week throughout the scholastic year. At these dispensaries my clinical assistants, Drs. McKimmie, Dye and Seibert, teach the students the use of the light, the method of examination, the application of instruments, the diagnostication and treatment of diseases and the performance of the minor operations. The demonstration of infectious diseases of the upper air tract is conducted in the contagious wards at Providence Hospital, over which I have charge, with Dr. R. W. Walker as clinical assistant. In the suspect room, suspicious cases are demonstrated and differentiated. Diphtheria in its various phases is shown and the use of antitoxine demonstrated. Intubations are posted and students are admitted to witness the introduction and extraction of tubes.

The course of instruction is only open to qualified students of the fourth year. Every effort is directed to making the course as practical as possible. Diagrams, specimens and instruments are used whenever they can serve the purpose of increasing the attention and more clearly demonstrating the idea which is to be conveyed. It will be readily seen that in this course of lectures the teacher recognizes the fact that he is dealing with an undergraduate body, not with a finished product. In other words, he must appreciate the limitations of the student body as a recipient of knowledge and only give to it of thought that which it can assimilate and store up as knowledge. It is our effort not to produce specialists of laryngology and rhinology of the undergraduate, but to produce a medical graduate who has a good working knowledge of this department of medicine, a graduate who is capable of making use of instruments of precision and diagnosis, and of making diagnoses in those forms of special lesions which will come most frequently under his observation, as a young general practitioner and to endow him with the ability to recognize how far he may pursue the treatment of the condition and when he should cease to make such efforts.

1317 Connecticut Ave.

THE METHOD OF TEACHING LARYNGOLOGY IN THE JEFFERSON MEDICAL COLLEGE.

BY D. BRADEN KYLE, A.M., M.D., PHILADELPHIA, PA.

The teaching of the special subjects in some of our medical Colleges is handicapped by the fact that in many of the special branches a final examination is not required. In the Jefferson Medical College, Laryngology, as well as all other special branches, is a full faculty position and the senior students are required to pass a final examination before graduation.

In the special instruction to the undergraduate, particular attention is given to the pathology of the various lesions of the mucous membrane of the upper respiratory tract, as the teaching in the Chair of Laryngology embraces this tract down as far as the larynx. The clinical lectures include not only the local diseases of the tissue embraced in this specialty, but also take up the diseases which are constitutional and which have local manifestations in the mucous membrane of the respiratory tract. The undergraduate teaching is limited to the senior year of the four year course. One clinical lecture is given each week during the entire eight months' course, the practical instruction is carried out in the out-patient department of the hospital by a corps of assistants, and the class is subdivided into sections, so that during each daily clinic, from twelve to one o'clock, eight men of the senior class are present for practical work, each student receiving twelve practical demonstrations. The out-patient department is open for the treatment of patients one hour daily, and last year over eleven thousand treatments were given, including old and new patients. This affords a number of cases for clinical observation by the undergraduate. The out-patient work is subdivided for post-graduate and undergraduate teaching under the following method: The new patients are seen by the Professor of Laryngology or the Chief of Clinic, the diagnosis is made and each assistant is assigned a certain subdivision of the special work. For example, all tumor cases are referred to one assistant, who may have one or two assistants under him and he is responsible for his own cases. The accessory cavity cases are referred to another assistant, the adenoid and tonsil cases to another, the septal cases to another, etc., each having as it were, a separate clinic.

Each special assistant keeps a record of his individual cases, carries on a special line of treatment as directed by myself, notes any special or peculiar phenomena in special cases; and in any case requiring operation, he is the chief clinical assistant for his particular cases. This is particularly advantageous as it permits of the grouping of cases and also of valuable deductions being drawn from any particular line of work. Another great advantage, especially in post-graduate work is that, at any time on one or two days' notice, the assistant having in charge any particular line of cases can have all the cases under his care present at any one demonstration, so that the student may study all or any particular variety of cases. The assistants are changed from one special line of cases to another so that gradually they cover the entire special field. I have found this an excellent method, not only for teaching purposes, but also for the keeping of records and the making of clinical deductions, and it has the advantage of being exceedingly practical. Special attention is given to that subdivision of the specialty embracing the systemic cases which require medical attention, or in other words, the cases in which the local lesion is in reality only a local manifestation of some systemic disease.

All acute and traumatic cases, requiring immediate or surgical attention, come directly under the supervision of myself or the chief of clinic. The chronic cases are watched closely by the special assistant, and any particular case failing to respond to treatment, is referred back to the head of the department. This enables me to keep all the cases directly under observation. This grouping of cases is of great value, owing to the fact that it enables us to always have under our command sufficient material to illustrate at our clinical lectures almost any variety of the special diseases. Each clinical assistant keeps records of his individual cases and also a separate record is kept by the general registrar.

At least one-half of the thirty-two lectures are given to the consideration of general and systemic conditions which produce local manifestations in the mucous membrane of the upper respiratory tract. As far as possible the students are told beforehand the subject of the next lecture, so that they may, if they have an opportunity, look up the subject.

The facilities in the Department of Laryngology consist of six rooms; a large general reception room; a registrar's room, where the records are kept; the room for the head of the department, with an extra light for his chief of clinic; all cases pass through this room, and are then referred to the special assistant; the large

treatment room is supplied with three tables with four seats at each table. Adjoining this room is a special operating room fitted up with every modern appliance for antiseptic surgery. Also adjoining my private room is a special laboratory room for pathological work and the examination of saliva, sputum, blood and urine.

With the immense supply of material, ample opportunity is afforded for surgical work. During the last year over three hundred operations were performed embracing every condition in this special line of surgery. The students are privileged to attend these operations, and as far as possible, they are given bedside instruction in the operative cases. In the clinical lectures, the special diseases are taken up systematically; the etiology, pathology, symptomatology, diagnosis, prognosis, complications and treatment are given in full.

1517 Walnut Street.

Anomalies of the Accessory Sinuses. K. M. MENZEL. *Monatsschrift f. Ohrenheilk.*, Sept., 1905.

Three cases are reported.

In the first case the right frontal sinus extended over both sides of the frontal bone, occupying an area larger than that usually occupied by both frontal sinuses. The left sinus was situated behind the left half of the right sinus.

In the second case the right frontal sinus extended over the median line for a considerable distance. To the left of this sinus another large cavity, simulating the left sinus, existed, which however proved to be a large ethmoid cell which had grown into the left side of the frontal bone. The cell which represented, anatomically, the frontal sinus proper, consisted of a small cell, situated behind and below the larger ethmoid cell.

The third case was a maxillary sinus which, in addition to the natural opening and two accessory openings emptying into the middle meatus, had a third accessory opening emptying into the superior meatus.

YANKAUER.

THE TEACHING OF LARYNGOLOGY AND RHINOLOGY IN THE NEW YORK UNIVERSITY, UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE.

BY CORNELIUS G. COAKLEY, M.D., NEW YORK CITY.

Instructions in Laryngology and Rhinology is given in the fourth or final year. It consists of lectures, section teaching and special work. I have thought it best to present here the announcement of each subdivision of the subject as printed in the Annual Catalog and to follow this with an account of the detailed manner in which these specifications are carried out by my assistants and myself.

1. LECTURES. One a week throughout half the session. This course of lectures will comprise a presentation of the special anatomy and physiology of the upper respiratory tract; the etiology and pathology of affections of the nose and throat, and a description of the more common diseases of those organs, their diagnosis and treatment. Where practicable, these lectures will be illustrated by cases of the diseases described. Professor Coakley.

Remarks. The usual number of lectures is twenty. I have found it most practicable to assign in advance the subjects of each lecture. Students are required to read such topics in the Author's Text Book, and in order to ascertain the thoroughness with which this is done, about half the hour is devoted to questioning them by name on the more important points of the lesson assigned. The balance of the hour is occupied in explaining in greater detail the weighty points in diagnosis and treatment. The students are marked for their answers which forms a part of the final examination rank on the subject.

2. SECTION TEACHING. Small sections of the class will be taught the regional anatomy of the nose and throat by means of preserved specimens and models; the methods of rhinological and laryngological examination, with an opportunity to practice those methods on cases, and the medicinal and operative treatment of cases of disease of the nose and throat. Professor Coakley and assistants.

Remarks. The class is divided into six sections, each of which receives four weeks practical instruction four hours each week or

SCHEDULE.

NOSE.

- RHINITIS
  - Acute
    - Simple
    - Membranous
    - Vaso-motor
  - Chronic
    - Hypertrophic
      - General
      - *Inf. Turbinal*
        - *Anterior*
        - *Inferior*
        - *Posterior*
      - Mid. Turbinal
        - Anterior
        - *Inferior*
        - Cystic
    - Atrophic
    - *Polypoid*
    - Tubercular
    - Syphilitic
- FOREIGN BODIES
- SEPTUM
  - *Deviations*
  - *Spurs*
  - Abscess
  - Perforation
  - Tuberculosis
  - Syphilis
- NON-MALIGNANT GROWTHS
- MALIGNANT GROWTHS
- *Epistaxis* (*dilated venules*)

ACCESSORY SINUSES.

- ACUTE
  - *Maxillary*
  - Frontal
  - Ethmoid
  - Sphenoid
- CHRONIC
  - *Maxillary*
  - *Frontal*
  - Ethmoid
  - Sphenoid

PHARYNX.

- *Adenoids*
- PHARYNGITIS
  - Acute
    - Simple
    - Diphtheritic
  - Chronic
    - *Hypertrophic*
    - Atrophic
    - Syphilitic
    - Tubercular
    - Mycotic
  - *Retro-pharyngeal Abscess*
  - TONSILLITIS
    - Acute
      - Simple
      - Diphtheritic
      - *Peritonsillar Abscess*
    - Chronic
      - *Hypertrophic*
- NON-MALIGNANT GROWTHS
- MALIGNANT GROWTHS

TONGUE

- VARIX
- *Hypertrophied Lymphoid Tissue*
- MALIGNANT GROWTHS

LARYNX

- LARYNGITIS
  - Acute
  - Chronic
    - Hypertrophic
    - Atrophic
    - Tubercular
    - Syphilitic
- NON-MALIGNANT GROWTHS
- MALIGNANT GROWTHS
- NEUROSES
  - Paralyses
  - Spasms

sixteen hours in all. This is under the direct care of Doctors W. A. Chisholm and John McCoy. The accompanying list of the more common diseased conditions of the upper respiratory tract is placed in the Dispensary and an endeavor made to have each student examine a case showing the diseases on the schedule. Those printed in italics represent the operations which each student witnesses the instructors perform. In order that duplications of work may not be done and that the head of the department may know what practical work the members of each section have witnessed, Doctors Chisholm and McCoy check off each day the diseased conditions which they have demonstrated.

About three thousand new patients are treated each year. On the average only about half a dozen of the rarer diseases found on this list fail to be demonstrated to each section.

3. SPECIAL WORK. An optional course in the diseases of the nose and throat is offered to those students who are prepared to take it. The course will include practical drill in diagnosis and treatment. Opportunities to perform minor operations will also be accorded to students who show sufficient proficiency. Professor Coakley and assistants.

FACILITIES. The clinical material available for instruction is drawn from the College Clinic. Small sections of the class are privileged to attend the clinics on the nose and throat at the Demilt Dispensary and operations at Columbus Hospital. The institutions are but a short distance from the College.

At the end of the session a written examination is held.

The questions given in 1906 were:

1. Give the symptoms, diagnosis and treatment of acute sinusitis.
2. Name the causes of aphonia.

53 West 56th Street.

THE TEACHING OF LARYNGOLOGY IN JOHNS HOPKINS UNIVERSITY.

BY JOHN NOLAND MACKENZIE, M.D., BALTIMORE, MARYLAND.

Of all the pure specialties, that is to say, those branches requiring special technique and special instruments and methods of precision, laryngology is the most generally useful to the diagnostician and general practitioner. The time has gone by when it is necessary to press its claim to recognition of the highest rank. It should hold high place in the curriculum of the college and university. It should have a separate, thoroughly equipped department and a full professorship. While I do not wish to overestimate the relative value of laryngology in the scheme of medical education, and while I am fully conscious of the present congested condition of the schedule and the future necessity of a large number of elective studies, I am of the opinion that in view of its very great importance it should be, as it is in the curriculum of the Johns Hopkins University, an obligatory study.

The proper time to lay the foundation for the educated laryngologist is in early life, in his early studies, in his undergraduate days; for it is at this period of his medical training that he is in the best position to acquire that fundamental knowledge and, what is of more importance, that breadth of mind which is so essential to his future development. At this receptive period of the development of his mind he can best recognize the limitations of each special branch of medicine and can best be taught to generalize profoundly not in one but in all departments of medical thought. It is at this stage of his career that it is impossible for him to cut loose from the other departments of medicine. The growth of his special studies goes on *pari passu* with his advance in other lines of work and he is brought in daily contact with disease in other organs of the body. He learns at the outset that no department of medicine is isolated and independent, but that they are all mutually dependent and co-ordinate. And if he is made of the proper stuff, this fundamental lesson and illuminating first impression will follow him in his special work in after-life as an inspiration and a guiding star.

The Johns Hopkins University deserves the credit of being the first institution of learning, either in this country or beyond the

seas, to give to laryngology the prominence which its place in medical education demands. It was the first to make it an obligatory study in the curriculum, and to make an examination in this branch a requirement for the degree of Doctor of Medicine. This was one step, and in consideration of the former neglect of the subject, a prodigious one, to place laryngology where it properly belongs and to give it the position and prestige to which it is justly entitled. It marks, therefore, an important era in the evolution of the undergraduate study of laryngology. The method of teaching the specialty which has been adopted in this institution is a matter then of historical interest. I shall content myself with simply giving a mere outline of the work, and shall not enter into matters of detail.

The time required for the degree of Doctor of Medicine is four years, of nine months each. The first two years are devoted mainly to practical work of all kinds in the laboratories of anatomy, physiology, physiological chemistry, pharmacology and toxicology, pathology and bacteriology. During the last two years much of the student's time is spent in practical work in the wards, laboratories and dispensary. It is not until the fourth year that the class enters the special departments. It is my intention to give a course on laryngology in the third year, so that when the student enters his graduating or fourth year course, he may be at least familiar with the use of the mirror.

The graduating class is divided into sections—each section (of the fourth-year class) attends for one and one-half hours daily during two months, the laryngological and rhinological department, where they receive practical instruction from my assistants and myself. After preliminary drilling in the use of the laryngoscope and other technical procedures, and in diagnosis, the student assumes the work of clinical assistant. He is given pathological material for examination and diagnosis, and is encouraged to report cases and read papers before the Hospital Medical Society, to look up the literature of interesting subjects connected with laryngology, to observe for himself and, if he has time, to do original work. He is taught to investigate and to inquire, and I may say just here that it often requires a very high order of human ingenuity to construct an evasive answer to some of the conundrums with which I am frequently assailed. He takes his first lesson on the human subject—gets his first impression from Nature. I formerly used models; but some one stole them and I am glad they are gone.

By the above method, the teacher comes into direct personal contact with each member of the class, and is enabled to measure the mental status and personal equation of the individual. In no other way can laryngology be properly taught. It is hard work, but it pays in the results which are accomplished. Laryngology can not be taught by text-book or lecture. It must be taught over the shoulder of the instructor, and on the part of the student, must be acquired by direct contact with, and personal observation on, the living subject.

Each student, by this method, becomes an individual responsibility—a special care. And just here let me observe that the day of operating before crowded benches is no more. The amphitheatre with its old-fashioned surgical clinic will soon become an anachronism. Tier after tier of seats in an operating room is simply a waste of space which could be utilized in a far more profitable manner. No more play to the gallery—no more spectacular performance! Of all the special studies, laryngology is the most difficult and troublesome to teach. It involves hard, painstaking work and patience, not only on the part of the teacher, but also on the part of the student. Each student is practically a special pupil and must be individually instructed; and to that end the chief of the department should have a corps of trained assistants whose work he may complement and supervise.

While the didactic lecture is fast becoming an anachronism, I do not believe that the day of its usefulness is completely gone. I give a systematic course of weekly lectures to the entire class which are supplemented by pathological and clinical demonstrations, on the anatomy, physiology and commoner diseases of the upper air-passages and their relations to morbid processes in other parts of the body. In this course especial attention is paid to diagnosis. The object of these lectures is two-fold; (1) to give in a concentrated form and in the shortest possible time information which could not be acquired except by great additional labor on the part of the student, and (2) to avoid endless repetition in the section room. One year I abandoned the didactic lectures altogether and gave up the time to practical work alone; but the change was not satisfactory for many reasons and I was obliged, therefore, to return to this method of instruction.

Among the many questions that are asked me is the justly serious one concerning examinations. The question of the value of examinations is a very important one and one which is destined soon to

be pressed to final settlement. Instead of the written examination of the entire class at the end of the session, each group of students is given a thoroughly practical one at the termination of its section work and this examination is final.

Each student who graduates from the school must be familiar with the use of the laryngoscope and be able to diagnosticate typical cases of the commoner diseases of the upper air tract. He is marked as in the other departments and the examination affects his standing in the class and operates for or against his chances for hospital positions after graduation. In other words, for the first time in the history of medical undergraduate education this branch of study has been taken absolutely seriously.

This in brief, is a simple outline of the way in which laryngology is taught in the Johns Hopkins Medical School. I am fully aware of the imperfections of the method; but everything must have a beginning, and time and further experience will doubtless make it more perfect. In the classes under my care it has so far been very successful. The net result is that when the student graduates he has made a very fair groundwork on which to base, in the future, if he will, a more elaborate study of the specialty.

605 Washington Place.

Caries of the Mastoid and Optic Neuritis. ESPENSCHIED. *Arch. f. Ohrenheilk.*, Leipzig, Oct., 1904.

The author reports a number of cases and concludes as follows:

Hyperaemia of the optic nerve is present in many cases of middle ear suppuration of moderate severity, and it is not an indication for opening the mastoid.

Pronounced optic neuritis (choked disk) was found only in cases in which other indications for opening the mastoid were present.

Optic neuritis was present in 4% of the cases operated upon and in 25% of cases with intracranial complications.

In fatal cases in which choked disk was present, the cause of death was leptomeningitis.

In none of the cases was the vision permanently affected.

YANKAUER.

THE TEACHING OF RHINOLOGY AND LARYNGOLOGY, COLLEGE OF PHYSICIANS AND SURGEONS, DEPARTMENT OF MEDICINE OF THE UNIVERSITY OF ILLINOIS.

BY WILLIAM LINCOLN BALLENGER, M.D., CHICAGO.

The teaching of Rhinology and Laryngology in the College of Physicians and Surgeons, is divided into two departments, namely (1) Didactic instruction and (2) Clinical instruction.

THE DIDACTIC TEACHING.

The didactic teaching is devoted to the principles of Rhinology and Laryngology. The subject is approached from the standpoint of regional or clinical anatomy, descriptive anatomy being but incidentally touched upon.

A Concrete Example: The nose is described as the upper portion of the respiratory tract, which is divided into two chambers by the septum. Each nasal chamber is still further divided into three meatus, by the inferior and middle turbinated bodies. The turbinated bodies are characterized by the presence of the "swell bodies" or erectile tissue in certain designated positions.

The meatus are characterized as containing the cell openings of the nasal accessory sinuses, and of the tear duct. Into the inferior meatus drains only the tear duct. Into the middle meatus drain the frontal, anterior ethmoidal, and antral cells. Into the superior meatus drain the posterior ethmoidal and sphenoidal cells.

The greater portion of the mucous membrane of the nose and of the accessory nasal sinuses, is covered by columnar ciliated epithelium, which undergoes normal mucoid degeneration and forms the mucus of the secretions. The cilia, by their wave-like motion, carry the secretions to the cell openings and on to the posterior nares.

The relation of the septum to the outer walls of the nose, and to the physics of respiration is explained. Its structure is also shown.

Having used four or five hours to elaborate the foregoing facts, I proceed to make practical applications and clinical deductions, somewhat as follows:

The Rationale of Inflammatory Processes of the Accessory Sinuses.

1. Specimens are shown i from the Anatomical and Pathological Museum of the college, in which the septum is deviated in its upper or middle portion, so that it presses against the outer wall (middle turbinal and ethmoidal region) of the nose.

2. Such a deflection obviously interferes with the proper drainage of the ethmoidal and possibly the sphenoidal sinuses. Furthermore, the pressure excites hyperaemia and possibly irritation of the ethmoidal structure.

3. The retention of the secretion results in its decomposition. Its bacteriocidal power is lessened.

4. The irritation of the surface epithelium of the mucous membrane of the nose and cells results in a lowered tonicity, hence inflammatory reaction at first catarrhal in type sets in. Later, the conditions being favorable, infection occurs, and pus is discharged from the posterior ethmoidal cells. A true empyaema of the cells is thus established.

Having made the above sequence of pathological changes clear, and having referred to other factors entering into the above processes, I turn the attention of the students to the Principles of Diagnosis as applied to this class of cases.

The Principles of Diagnosis of Inflammatory Diseases of the Accessory Sinuses.

1. When pus is present in the nose it is almost always an indication of a purulent inflammation of one or more of the accessory sinuses.

2. If it is limited to the middle meatus it is probably from one or more of the sinuses draining into the middle meatus, that is, the frontal sinus, the anterior ethmoid or the antrum.

3. If the pus is coming down between the middle turbinal and the septum (the olfactory fisssure), it is from the posterior ethmoidal or the sphenoidal sinuses.

I proceed somewhat after the manner above briefly outlined to develop the probability of such and such results following such and such predisposing anatomical conditions, until the main facts underlying the inflammatory diseases of the nose and of the accessory sinuses are instilled into the minds of the students. I do not lecture upon each inflammatory disease, but upon inflammatory processes of the nose in general, developing a basis for intelligent thought on the part of the student, so that he knows the more important truths concerning these diseases. In the clinic he sees numerous concrete examples, and he has the opportunity to make actual observations, and to put his acquired information to actual use. His ideas are thus rounded and ripened with experience, so that when he enters the domain of the practice of medicine he has a somewhat broad and adequate knowledge of the more important diseases of the nose and throat.

THE CLINICAL TEACHING.

The clinical instruction is divided into two departments, namely (1) Dispensary Instruction to small sections of students, by a corps of clinical instructors; (2) a University Conference and Clinic, presided over by myself and Dr. J. C. Beck and the clinical instructors from the dispensary clinics.

The *Dispensary Teaching* consists in the demonstration of methods of examination, diagnosis and treatment of the cases present. Students are permitted to examine the cases and the essential points connected therewith are pointed out by the instructors. The cases are then treated, the purpose and technique of the same being explained to the section.

The University Conference and Clinic.

This is, I believe, the crowning feature of the instruction in the Rhinological and Larynoglocial and Olotogical Department of the College. As the organization of the clinic is somewhat different from that usually in vogue, a brief statement concerning it may be of interest.

The organization of the clinic is upon a coöperative plan. The personnel of the clinicians is as follows: Prof. Wm. L. Ballenger; Adjunct Prof. J. C. Beck; Clinical Instructors, Henrietta Gould, J. Goldberger and L. J. Hughes. All participate in the instruction, and in the treatment and operations before the class. The students also participate in the examination and treatment of the cases. In addition to the teaching corps, there is a student organization coöperating in the conduct of the clinic, as follows: The senior and junior house surgeons, the class historian, the class pathologist, and the class anaesthetist. A nurse is of course in constant attendance.

The house surgeons assist in the operations, the class historian writes and reads the records of all cases; the class pathologist takes all specimens of tissue, etc., to the College Laboratory and presents the report on the same at the following clinic.

The clinic is conducted as follows: It is three hours in length and is held every Friday morning from 9 to 12 o'clock in the surgical amphitheatre. The first hour is devoted to the preliminary examination of the cases, writing records and preparing them for operation. At 10 o'clock, from eight to sixteen students are assigned to examine cases in the examination rooms adjoining the amphitheatre, under the direction of the adjunct Professor and the Clinical Assistants.

While these examinations are in progress the students sent out at the previous clinic are called upon to read brief abstracts from the literature concerning similar cases examined by them. Four students are assigned to each case, hence one reports on the etiology, another the symptomatology, another the pathology and the fourth the treatment. These reports are then briefly discussed by the Professors and the students.

The second hour is thus devoted to a clinical conference between students and the corps of teachers. Many of the students have provided themselves with a head mirror, speculae, etc., to facilitate their work in the examination of the patients. The literary findings are written upon a 4x6 card and are handed in and filed for gradation. Upon one side of the card is the record of the case personally examined by him, and upon the other the literary findings concerning this class of cases.

The third hour is devoted to the presentation of cases, and to operations. As the material is abundant the third hour is usually entirely devoted to surgical operations upon the nose, throat and ear.

The operative clinic is coöperative, that is, those associated with me in the clinical teaching, are asked to perform some of the operations before the class. This stimulates interest on their part and affords the students an opportunity to see the individuality of five operators instead of one.

The above plan of instruction has proven to be popular with the students, and the corps of teachers. It appears to be eminently practical, as the didactic instruction is limited to the exposition of the principles of practice, while in the clinical instruction is devoted half the time to drilling students in the examination of cases and in presenting and defending their literary findings concerning the same, the balance of the time being devoted to oprations and treatments in the presence of all the students.

In addition to the above methods of teaching, free use is made of the anatomical and pathological specimens from the museum, as well as of large clay models made by me, for the purpose. In this way the points of anatomical and clinical interest become fixed in the minds of the students. I have, for instance, a large clay model showing the conformation of the lateral wall of the nose, which shows clearly the turbinated bodies, and meatuses; also the ostei of the sinuses opening into the middle and superior meatuses. By keeping these large models, the details of which can be seen across the

amphitheatre, before the students they unconsciously get a lasting impression of the gross anatomical landmarks which will serve a useful purpose when they undertake the examination and treatment of cases in actual practice.

The object of the instruction in the Rhinological, Laryngological and Otological Department of the College of Physicians and Surgeons is (a) to expound the principles of diagnosis and the rationale of the diseases; (b) to teach students by actual contact with, and the examination of cases; (c) to encourage students to make a search of the literature for knowledge concerning the cases examined; (d) to teach him methods of examination, treatment and operation by example as well as precept.

Having done this, all has been done that is possible in an outdoor clinic excepting, perhaps, tabulated monthly reports of all the cases presented during the previous month. Such a tabulation upon a large black board, as recommended by Dr. Wm. Osler, would enable the students to form a true estimate of cases as the varying symptomatology and the results of treatment in cases of a like character could be compared and studied.

In addition to the instruction above described, Dr. R. H. Brown holds a clinic one hour a week. Attendance upon the didactic instruction is required, while the attendance upon the University Conference and Clinic, and the Clinic is elective.

While the foregoing outline of the teaching methods pursued in the teaching of Laryngology and Otology in the College of Physicians and Surgeons is very brief and fragmentary, it may serve the purpose of, at least, suggesting the fundamental principles underlying the methods.

103 State Street.

THE TEACHING OF LARYNGOLOGY AND RHINOLOGY IN THE DENVER AND GROSS COLLEGE OF MEDICINE.

BY ROBERT LEVY, M.D., DENVER, COLORADO.

The department of laryngology and rhinology forms a distinct and definite portion of the curriculum in this institution. Being an undergraduate school, my conception of the amount of time and study which a student shall devote to specialties of the character of laryngology and rhinology is that a general and comprehensive discussion of the subject shall be indulged in to the end that the graduate may be able to detect the ordinary diseases included in the specialty, but that his study shall not be so extensive as to warrant a claim to practice as a specialist. In the broad field of medicine, as viewed by the general practitioner to-day, the competent physician and surgeon should be able to recognize or at least suspect the existence of affections of special organs and at the same time appreciate the relative importance of symptoms whether involving special organs or the general economy. It should not be our intention to make specialists in an undergraduate school, nor to compel so absorbing an interest in any specialty that the student may not have ample time and energy for a complete, careful and thorough study of general medicine, surgery, obstetrics, etc. Nor should we in any degree minimize the importance of a careful study of the diseases involved in any special department. Above all things, it should be the purpose of all teachers of so called specialties to impress their students with the fundimental principle that a specialist views his subject as part of general medicine and not as an entity distinct and separate from the rest of medicine. The true specialist is never narrow, but on the contrary has often broader and more comprehensive views than exist among general practitioners.

The above principles control the method of instruction in the Denver and Gross College of Medicine. Instruction is given by didactic and clinical methods, the latter supplemented by personal instruction in the out patient department to small sections, each individual of which comes in closest contact with the patient under the direct supervision of the Professor or his assistants.

The subjects embraced in this specialty are taught during the third and fourth years. The third year students receive only such instruc-

tion as may be considered purely preparatory for a clearer conception of the studies completed in their fourth year. They are therefore expected to attend all of the general clinical lectures and the work of the sections, where they are required to devote their time to familiarizing themselves with the use of our special instruments for diagnostic purposes. They are rarely required to determine the nature of a given disease, but rather to acquire sufficient dexterity in the management of the reflecting mirror, the laryngoscope and rhinoscope to enable them to describe the physical characteristics of the structures seen normally in the upper air passages.

The students of the fourth year having become familiar with the use of instruments are now able to appreciate didactic descriptions of diseased conditions and to recognize them in the dispensary patients. The work before this class is therefore, didactic and clinical. The didactic work is conducted by lectures, thirty-two in number, which begin with a short history of our specialty following which the important diseases are considered separately. Special stress is laid upon the necessity of considering all diseases of the upper air passages as distinct pathological conditions capable of the same classification that diseases of other portions of the body possess, always keeping in mind the pathological sequence. It is attempted in our course to simplify the varied nomenclature which has burdened our specialty for many years and which even to-day is seen to exist in the difference in the classification of diseases found in the numerous text books. In order to simplify the study of diseases a definite plan is adopted in which each affection is studied systematically with reference to first, name; second, etiology; third, pathology; fourth, symptomatology, (a) subjective (b) objective (c) general; fifth, diagnosis; sixth, prognosis; seventh, treatment.

During a term of eight months, sixteen clinical lectures are delivered to the class as a body. In these lectures the students' special attention is directed to the method of studying a case with a view of so recording the symptoms elucidated that a diagnosis must naturally follow. In order to accomplish this the student is urged to investigate the symptomatology in accordance with the following schedule:

Symptomatology:

Subjective: Voice;
Respiration,
Laryngeal,
Nasal,
Deglutition,
Sense of Smell,

Sense of Taste,
Sense of Hearing,
Pain,
Discharge.

Objective: Color,
Form,
External,
Internal,
Loss of Substance,
Increase in Substance,
Tumors,
Secretion.

General: Family History,
Personal History,
Past and present,
Temperature,
Pulse,
Digestive, circulatory and other systems.

A consideration of each sub-division of the above schedule will result in a complete and thorough development of the symptomatology of a given case with special reference to the diseases of the upper air passages. Much stress is laid upon investigation of general symptomatology to the end that the student may be more forcibly impressed with the fact that a specialty cannot be considered without reference to the entire organization and in order that important therapeutic indications shall not be overlooked. The clinics are largely in the nature of a conference. The cases presented are investigated at the time of the lecture, the symptoms being elucidated by the Professor or the students or by both. The Professor eliminates such symptoms as have no bearing upon the existing conditions, the result being that a definite accumulation of suggestive, subjective symptoms are placed clearly before the student body. This leads to a provisional diagnosis, which is confirmed by a statement from the Professor or from some student who may have previously examined the case, thus making the diagnosis positive.

Treatment is outlined in these clinical lectures, but only such therapeutic measures are demonstrated as may be clearly appreciated by a large class of students. It is apparent, therefore, that much manipulative treatment cannot be conducted before the general class.

Instruction in sections is generally recognized as the logical manner of conducting the best medical course, whether in anatomy, general medicine or the specialties. Of special value is this method in such specialties as require the examination of organs which can be viewed by only one at a time, and in which manipulative skill for

diagnostic and therapeutic purposes is required. Eminently true is this in the department of laryngology and rhinology; and therefore, each member of the section is assigned a case for personal examination and upon which the advanced student is required to make a statement to the instructor. The arrangement in the out patient department is such that each student has a fully equipped booth in which he is free from outside interference. These booths have been constructed in accordance with the plan which I consider most complete and perfect for such instruction. It is the arrangement and architecture found in Prof. Fraenkel's clinic. While the student is instructed in methods of treatment, being privileged to witness in the section work the more common nasal, pharyngeal and laryngeal operations, and at the same time allowed to conduct some of the routine treatment himself, he is especially urged to familiarize himself with the methods of examination, both of subjective and objective signs. His familiarity with the use of the special instruments in this department and his ability to recognize, after careful illumination, variations from the normal, constitute the test as to his understanding of the subject as taught in this undergraduate school.

California Building.

THE TEACHING OF LARYNGOLOGY IN THE MEDICAL DEPARTMENT OF ST. LOUIS UNIVERSITY.

BY W. M. C. BRYAN, M.S., M. D., ST. LOUIS, MO.

The teaching of this specialty in the Medical Department of St. Louis University is divided between the two professors of the diseases of the ear, nose and throat. The class is equally divided alphabetically, and the work of the two sections is developed independently with such modifications as may suggest themselves to their respective teachers. In this way, the objectionable features of instructing large classes is practically overcome.

While the special study of the diseases of the upper air tract is deferred until the senior year, the anatomy of these parts is very thoroughly taught in the freshman and sophomore years. Serial head sections are used to demonstrate the complicated relations of the nose and the accessory sinuses, of the larynx and surrounding structures. In addition, special dissections by the individual student are encouraged. In these classes, the histology is also studied, including the microscopy of the mucous membranes, the turbinal tissue, the tonsillar tissue, and the structures in the larynx.

The work of the senior student in this department consists of two hours a week of lectures or their equivalent in thesis work and quizzes. These last throughout the year. For clinical and individual instruction, the class is sub-divided into sections of six or seven students each. These take their turns in clinics, where abundant material is provided, each student having about fifteen days in the dispensary.

In the lectures, first of all, the anatomy of the parts is reviewed, with emphasis upon the relation of the anatomy, physiology, and pathology. This is facilitated by special anatomical preparations, charts, models, and projection pictures. The various diseases are presented in their etiology, diagnosis, and treatment, and whenever possible, an example of the conditions described is demonstrated. Throughout the course of lectures, the student has it impressed upon him that diseases of the nose and throat are frequently very intimately associated with general systemic conditions. Emphasis is laid upon the importance and necessity of constitutional treatment as well as of local methods for the relief of pathologic manifestations in the organs under consideration. The various means of

examination, and the special instruments for that purpose and for local treatment are displayed, and carefully explained and demonstrated. The more common and therefore more important operations are performed before the class, and the technique explained in detail. This serves as an introduction to the work in the clinic.

In the clinic, the need of individual instruction is recognized, and in the small sections of seven or eight members, can be fairly met with the aid of assistants. The effort is made to teach each student the manipulation of those instruments with which, as a general practitioner, he will need to be familiar. As the basis of all scientific medical work is the ability to make a diagnosis, the student is taught to see. It is essential that he acquire the ability to inspect the nares through the nasal speculum and to use the post nasal mirror and the laryngoscope. To accomplish this, there is one instructor to each group of two or three students. Using those patients who are selected because of their fitness for teaching purposes, the assistant, by precept, example, and criticism, directs the student, and incidentally protects the patient, during the more or less difficult progress from awkward beginnings to some facility and skill. As his technique improves, he is directed in the use of applications, sprays, and other remedial agents. In the clinic, the student has an opportunity to examine examples of all the commoner affections of the nose and throat, and of such of the rarer ones as may appear. Here, also, he views at closer range the various operative procedures of which he was a spectator from the benches of the lecture amphitheater.

Throughout the course, the aim is to familiarize the prospective general practitioner with the pathological possibilities in the upper air tract, to thoroughly ground him in that knowledge of these parts which will be of most value to him in general practice, and which will enable him to know when his patient requires the services of a laryngologist. Moreover, it is sought to place him in such a position that he will be able to profit by his future experiences and opportunities. If he decides to specialize, he has received at least an introduction; but it is recognized that the production of well trained specialists in laryngology should not be attempted in a general medical course.

3858 Westminster Place.